

FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

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Flight.

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EDITORIAL COMMENT.

The Aviation Industry and Allied Trades.

By way of enlisting the sympathies of those who have so far taken but a benevolent interest in the ever-spreading aeronautical industry, we have from time to time given details of the very remarkable and diverse channels in which the many requirements for the construction of aircraft have demanded the attention of trades previously regarding themselves as entirely uninterested in so remote a source of profit as the supply of vessels of the air. As the need for supplies has gradually asserted itself, one trade after another has found its interests on the verge of being drawn into this newly-born opening for commercial energy, until to day there can hardly be a body of skilled workers some of whom are not directly concerned with the growing output of aircraft. Under these circumstances it was hardly to be hoped for that the trade unions more immediately interested would let pass such golden opportunity to put in their spoke at as early a stage of the game as possible. And in this respect the Aeronautical

industry is not to be disappointed. There has, for some time, been a growing inclination in several of the shops to help forward the power of the unions, with the result that the officials have, with the nation's vital needs for the successful prosecution of the war as their partner, brought about the first signs of getting their claws to work. Several separate and informal gatherings have been organised at which individual schemes and plans of working have been discussed, and a few weeks ago, a more formal meeting was arranged in London, at the Westminster Palace Hotel, at which we believe a representative of the Home Office was present, when delegates from the Executive Committees of some seven or eight trade unions met to consider what working rules should be applied to their members who have joined up with aircraft factories. Now there is not the slightest objection to men combining together for legitimate protection of their interests, but it is obvious that those interests should not clash with the interests and requirements of the nation, especially at a time like the present, when the best effort is necessary of each individual in the Empire to ensure the maximum of efficiency wherever his or her energies may be directed, to obtain ultimate success for the Allies. Having regard to facts which are within our knowledge, where certain men have been out to create discord and dissatisfaction with working arrangements, resulting in considerable retardation of urgent "munitions" work in hand, it is not unreasonable for the tactics of raising difficulties just now, in regard to the conditions under which aircraft factories should work, to be looked upon with suspicion. We feel that the majority of the employees now in the aeroplane industry are not in sympathy with any interference by the unions, but they are powerless to prevent the officials from reaching out the tentacles of their organisations to suck in at this early stage any sustenance that may possibly be in store in the future for the further "nourishment" of their particular union and its officials. Hence the meeting already referred to, in which the more important subjects under review were the abolition of piecework and the employment of women in the aircraft industry. As to the question of piecework, as is customary with most trade unions, this was very strongly objected to. The objection to payment by this method is one of those extraordinary rules of the unions in favour of inefficiency as opposed to efficiency which we never could appreciate. The mystery is how, as time has gone on, the really competent and industrious workman has submitted to

such a trammelling of his earning powers. Nothing but fear can be at the bottom of the efficient man's acquiescence in such a state of things—the fear of being prevented from earning even a bare living for the maintenance of his wife and children. That such a state of things can be tolerated in the present days of progress, is a commentary upon the misuse of the power of slackers and inefficients, when organised, for the protection of their own laziness and shortcomings by cute officials who have to make and keep a job for themselves. It is unfortunately the natural outcome of unscrupulous political jobbery, which has made such a travesty of rewarding ability and industry a possibility, and so long as the competent man continues to submit to be penalised for the non-efficient, just so long will this nineteenth century tyranny hold together. If, as some seem to hope, party politics after the war will either disappear altogether or be so modified as to be a negligible quantity, there may be some hope for the reconsideration of some of the unholy privileges which have been exacted in the past few years in exchange for equally unholy support for the purpose of enabling jobs to be kept by both sides, viz., by politicians and trade union officials alike. Be this as it may, for the time being the delegates who conferred together plumped for the abolition of piece-work in the aircraft industry, and, moreover, the Minister of Munitions has been informed as a result, that members of the trade unions in question will not be permitted to accept employment in establishments into which piece-work has been introduced. The Munitions' Minister has further been notified by these unions that he is to issue instructions that all aeroplane construction work for the Government shall be paid for at an hourly rate of wages, and carried on under conditions acceptable to the trade organisations concerned. And so for the moment the handling of part of the country's interests is regulated by a handful of men who have obtained the one-sided powers of coercion which they exercise from the very source upon which they now enforce their terms of bondage. It is, indeed, a lesson deservedly learnt, of the length of arm of the proverb of "honesty being the best policy," even in politics. As to gracious permission to allow the employment of women in the aviation industry, a field which appears to be so eminently suited to their capabilities, this was not turned down without hope of fair consideration. It was determined that all proposals for the extension of the sphere of employment of women shall be submitted to and discussed by a national conference of employers' associations and the executive committees of the trade unions concerned. When this conference is to materialise we do not know, but at the conference held on Tuesday last at Westminster between the Minister of Munitions and representatives of an imposing array of trade unions—to the number of fifty-five—affected by the Munitions of War Act, 1915, Mr. Lloyd George put forward some home truths in regard to there being two sides to the position, as brought about by the National interests involved through the necessity of prosecuting the war against the Central European enemy.

In the official report issued of this conference, no speeches of delegates are given, but, reading between the lines, the general trend of those unpublished speeches may be gathered from the summary of the reply of the Minister of Munitions. He pointed out that "the Government desired the Act to work smoothly and satisfactorily. In the speeches that had been made it appeared to have been overlooked that while the

Munitions of War Act interfered to some extent with the liberties of the workman, the Minister of Munitions possessed extensive powers over controlled establishments which cut quite as deeply into the rights of private employers as any provision affecting workmen. He presumed that there was no desire on the part of the trade unions to repeal the part of the Act affecting employers. One chief object of the Act was to give State control over unlimited competition, a principle that many labour men had been advocating for a long time, and during the progress of this war more things had been done to further the principles of the Labour movement than the propaganda of a generation had been able to secure.

"It might seem hard that a workman could not leave one shop to go to another, but the same restriction applied to the soldier who objected to storm the Hohenzollern Redoubt, but would prefer to go to some place behind the fighting line. If this war was a just war, if we were fighting for humanity and for the overthrow of the domination of a military caste in Europe, it was not for men to stand out at such a time for the right to leave one shop to go to another when the whim seized them. He noticed that most of the amendments were in the direction of what might be called reciprocity. There was a feeling that if a workman could not discharge his employer without a certificate from a tribunal the employer ought not to be able to discharge the workman without a similar certificate. He had a good deal of sympathy with that, and the point would be considered."

It is to be hoped that these reminders will get home on those to whom they were addressed. From the union point of view there is only one side to be considered—their own. Immediately the reverse of the argument is put forward they decline to play. And so the game goes on. How we manage to muddle through to success and victory under such handicapping conditions, as opposed to the marvellous and unrelenting organisation of the Germans, is, indeed, a mystery. But we do somehow, and it only gives to think more furiously than ever of what we might achieve if only the Empire could be rid of such incubuses as in the present day have grown up and batted on our rotten political system. Time will come, if it has not already arrived, when professional politicians will probably be about on a level with professional burglars.

For its own protection, therefore, it behoves the aircraft industry to make provision before too late to counteract any machinations on the part of the unions—with an emphasis on the plural—to *entirely* dominate the trade.



D.S.O. for Naval Aviator.

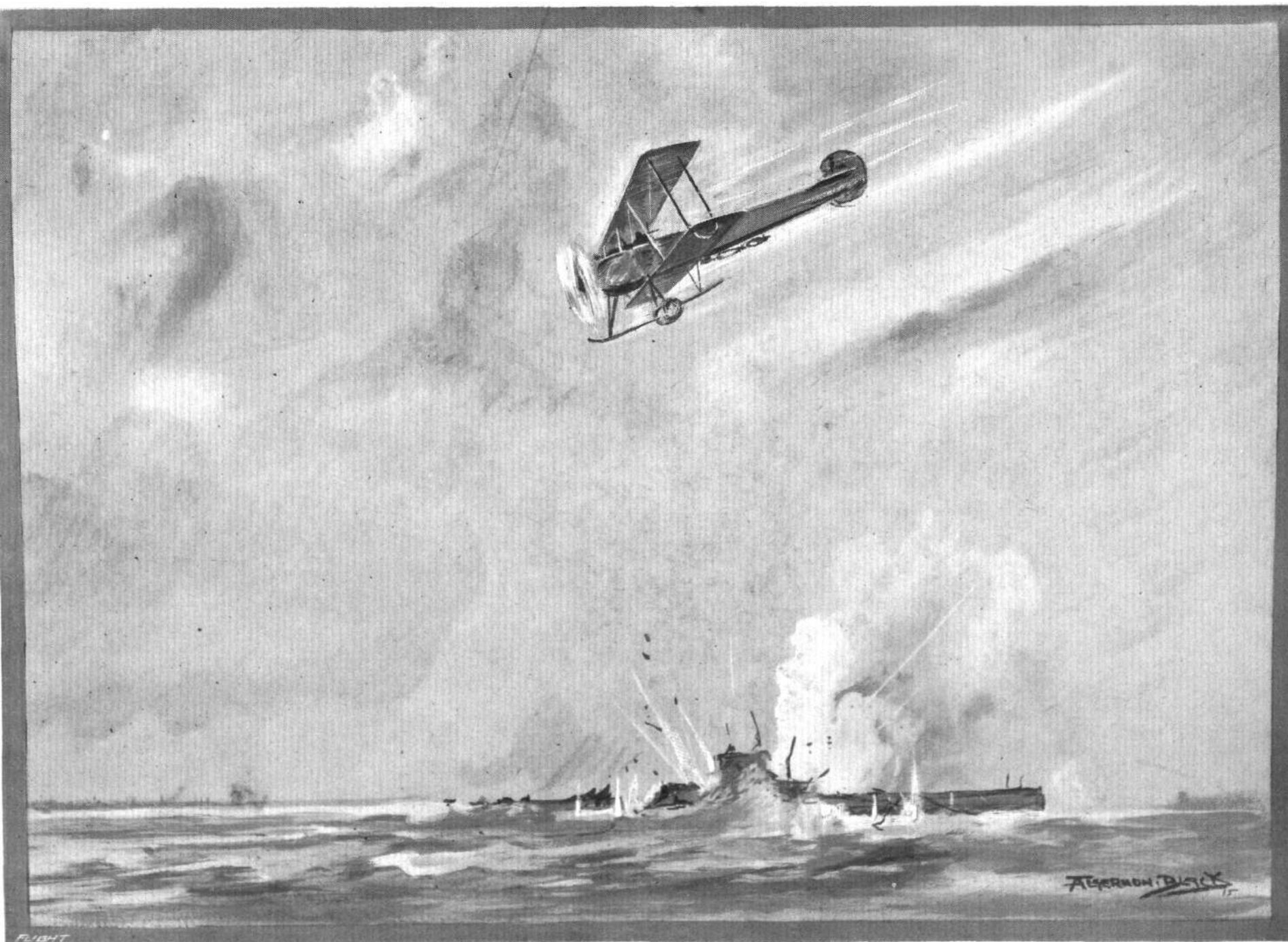
It was announced in the *London Gazette* of the 26th ult. that the King has been graciously pleased to give orders for the appointment of the undermentioned officer to be a Companion of the Distinguished Service Order, in recognition of the service described below:—

Flight-Commander JOSEPH RUSCOMBE WADHAM
SMYTH-PIGOTT, R.N.

On the night of November 13th-14th Flight-Commander Smyth-Pigott volunteered to attack the railway bridge at Kuleli Burgas. He was able to locate the bridge by the moonlight shining on the river, and descended to within 300 ft. of it before releasing his bombs. He was heavily fired on from several places, and, in spite of trouble with his engine—which commenced before he reached the bridge—he returned safely to his base after a night flight which had lasted over four hours.

DECEMBER 3, 1915.

FLIGHT



OFF THE BELGIAN COAST.—Aeroplane *versus* Submarine. From an original drawing by Algernon Black.

AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

British.

General Headquarters, Nov. 26th.

"ON the 25th twenty-three of our aeroplanes successfully bombed a German hut-encampment at Achiet le Grand (north-east of Albert). The enemy replied with a single aeroplane, which dropped six bombs near Bray, doing no damage."

General Headquarters, Nov. 29th.

"The enemy's aeroplanes were very active on November 28th. During the day there were fifteen encounters in the air, as a result of which one hostile machine was brought down near Sequedin. One of our pilots fought with no less than five hostile aeroplanes during a single flight.

"Bombing attacks were successfully carried out against the German aerodrome at Gits and an ammunition factory at Lachapelette. Fourteen machines attacked the former place and nineteen the latter. Considerable damage was done in both instances. All our machines returned safely.

"Reports from the coast district state that German aeroplanes were active there on the 28th, dropping bombs. During the day a French aeroplane brought down a German aeroplane, and a British seaplane brought down a German seaplane.

"In the afternoon a British aeroplane destroyed a German submarine off Middelkerke. It was seen to break in half."

Admiralty, Nov. 30th.

"A detailed report has now been received concerning the operations referred to in the War Office *communiqué* published this morning. On November 28th Flight Sub-Lieutenant Viney, R.N.A.S., accompanied by a French officer, Lieutenant le Comte de Sincay, whilst patrolling off the Belgian coast, dropped a bomb on a German submarine. The submarine was observed to have her back broken, and sank within a few minutes.

"During the course of the same day Flight Lieutenant Ferrand, R.N.A.S., with Air-Mechanic Oldfield, in a seaplane, shot down a German Albatros seaplane off Ostend. The Albatros dived nose first into the sea, and sank."

French.

Paris, Nov. 25th.

"The Turks, although well provided with ammunition, are showing themselves nervous and harassed by our aircraft, which bombarded the Constantinople-Dedeagatch railway line and damaged some of the works, and by the monitors and light vessels which are frequently bombarding the Asiatic coast. They are constantly kept on the watch, and are obliged to oppose us with important forces."

Paris, Nov. 27th. Afternoon.

"During the day a German aeroplane fell in the Aisne a short distance to the east of Berry-au-Bac. The aviators saved themselves by swimming. Some shells from our batteries destroyed the machine."

Paris, Nov. 27th. Evening.

"On November 25th our aviators dropped fifty bombs on Bulgarian encampments near the village of Strumitza, and bombarded Ishtip."

Paris, Nov. 28th. Afternoon.

"Yesterday our aeroplanes dropped nine 90 mm. (3½-in.) bombs on the station of Noyon, and forced two captive balloons to descend.

"This morning, to the north-east of Thezey-St. Martin, in the region of Pont à Mousson, one of our scouting

aeroplanes shot down a German aeroplane, which fell in the enemy's lines."

Paris, Nov. 28th. Evening.

"During the day our aircraft continued most active.

"In Belgium one of our aeroplanes, which was sent off in pursuit of an enemy air squadron, succeeded in bringing down a German machine, which fell into the sea off Westende Bains. A German torpedo-boat and some launches came out of Ostend and Middelkerke and attempted to save the machine. Allied seaplanes and our artillery having attacked the boats, succeeded in sinking one.

"A squadron of ten machines bombarded the sheds of Habsheim, east of Mulhouse. Eight bombs of 155 mm. and twenty bombs of 90 mm. were dropped on the sheds, which caught fire. An Aviatik on the ground was damaged by our projectiles. The enemy vainly attempted to pursue our craft. An Aviatik, struck by several machine gun bullets, was forced to come to earth. Another capsized near Lunnerbach.

"In the region of Nancy a German aeroplane was attacked by one of our patrol aeroplanes. The French machine, which flew close to the enemy, succeeded in bringing him down. Another German machine which was present at the engagement turned and fled."

Paris, Nov. 29th. Afternoon.

"Yesterday four German aeroplanes flew over Verdun and dropped some bombs, without causing any material damage. By way of reprisal five of our aeroplanes dropped over twenty bombs on the railway station of Briulles, to the south of Stenay. The line was cut, and a train which was travelling towards the north hurriedly put back."

Paris, Nov. 29th. Evening.

"Yesterday one of our aircraft was obliged to alight near Dompoevrin, on the left bank of the Meuse, in front of the enemy's positions. In spite of the violent fire of the German artillery the machine was only slightly damaged. The aviators are safe."

Russian.

Petrograd, Nov. 23rd.

On the Caucasian Front.—" . . . In the Paseine Valley our aviators successfully dropped bombs on the enemy trenches."

Belgian.

Havre, Nov. 27th.

"During last night our aviators bombarded enemy camps at Slype, Keyemis, Eesen, Clercken, Schoorbakke, and Woumen, as well as a convoy leaving Dixmude."

Italian.

Rome, Nov. 24th.

"Enemy aviators dropped bombs on Arsiero, doing slight damage, and on Ala, where four soldiers were wounded.

"One of our air squadrons bombarded the enemy aviation park at Aisovitz and another which is being organised at Aidussina, and on the railway stations of Vogersko, Aidussina, Reifenberg, and San Daniele. Our aviators, who were subjected to the usual anti-aircraft gun attack, returned safely."

Montenegrin.

Cettinje, Nov. 25th.

"On November 23rd and 24th nothing of importance

took place. An Austrian aeroplane dropped bombs on San Giovanni di Medua, which is the Montenegrin supply base. No serious damage was done."

German.

Berlin, Nov. 28th.

"An enemy aeroplane was shot down by machine gun fire near Buschhof (south-west of Jacobstadt). It fell between the positions of both sides, and was secured during the night by our patrols."

Berlin, Nov. 29th.

"During the clear frosty weather there was lively activity on the part of artillery and aviators along the entire front. To the north of St. Mihiel an enemy aeroplane was forced to make a landing before our front, and was destroyed by our artillery fire."

Berlin, Nov. 30th.

"*Eastern Theatre.*—A German aeroplane squadron attacked the railway establishments of Jachowitschi (to the south-east of Baranowitschi)."

Austrian.

Vienna, Nov. 27th.

"In an air duel one of our airmen brought down an enemy biplane near San Lorenzo di Mossa, where it was subsequently destroyed by our gunfire. In the sector of the Doberdo Plateau the battle on the northern slope of Monte San Michele resulted in our troops completely maintaining the battle front."

Turkish.

Constantinople, Nov. 24th.

"Sunday: We captured an English aeroplane, which was shot down. The pilot, a major, was slightly wounded and was made prisoner."

Constantinople, Nov. 27th.

"On the Irak front on November 22nd and 23rd, north of Kurna, and on the Tigris, west of Kut-el-Amara"

"At the same place we captured a fourth enemy aeroplane."

THE BRITISH AIR SERVICES.

Royal Naval Air Service.

THE following appeared among the Admiralty announcements of the 24th ult. :—

Temporary Assistant Engineer (R.N.R.) L. G. Ellis entered as Probationary Flight Sub-Lieutenant, for temporary service, with seniority of Nov. 23rd, and appointed to "President," additional, for R.N.A.S.

The following appeared among the Admiralty announcements of the 25th ult. :—

Commanders H. D. Briggs and H. P. Smyth-Osbourne both graded as Wing-Commanders, with seniority of Nov. 11th.

Acting Flight-Lieut. A. O. French-Brewster confirmed in rank, with original seniority, and reappointed to "President," additional, for R.N.A.S. Nov. 22nd.

Flight Sub-Lieut. F. H. Smith (temporary), commission as Temporary Flight Sub-Lieutenant terminated, and granted a temporary commission as Lieutenant, and appointed to "President," additional, for R.N.A.S. Nov. 24th.

Lieut. (R.N.V.R.) G. T. Davies (temporary) entered as Probationary Flight Sub-Lieutenant, for temporary service, with seniority of Nov. 24th, and appointed to "President," additional, for R.N.A.S.

The undermentioned have been granted temporary commissions as Sub-Lieutenants (R.N.V.R.), with seniority as follows: E. T. Henderson, Nov. 23rd, and appointed to "President," additional, for duty with Armoured Car Squadrons; W. H. Bedford and J. R. Swanston, Nov. 24th and 28th, respectively, and both appointed to "President," additional, for R.N.A.S.

The following appeared among the Admiralty announcements of the 29th ult. :—

Acting Flight-Lieut. A. O. French-Brewster confirmed in rank, with original seniority, and re-appointed to "President," additional, for R.N.A.S. Oct. 4th.

Temporary Sub-Lieuts. (R.N.V.R.) H. H. King and J. C. M. Lowe promoted to Temporary Lieutenants (R.N.V.R.), with seniority of Nov. 27th.

The following have been promoted to Temporary Sub-Lieutenants (R.N.V.R.), with seniority of Nov. 27th: Chief Petty Officers W. A. H. Buller, F. W. Temple, A. E. M. Haes, W. G. C. Munsie, B. W. Brigg, and Able Seaman K. V. Dollymore.

The undermentioned have been entered as Probationary Flight Sub-Lieutenants, and appointed to "President," additional, for R.N.A.S., with seniority as follows: P. S. Fisher, Oct. 27th; J. C. Watson, Oct. 29th; J. W. Hobbs, G. F. Ross, P. E. Beasley, S. T. Edwards, and K. G. Macdonald, Oct. 31st; J. K. Waugh, H. G. Leslie, K. F. Saunders, and D. A. H. Nelles, Nov. 3rd; A. M. Shook, Nov. 5th; A. G. Woodward, Nov. 6th.

F. Towers entered as a Temporary Flight-Lieutenant, with seniority of Nov. 27th.

The following appeared among the Admiralty announcements of the 30th ult. :—

Temporary Sub-Lieuts. (R.N.V.R.) A. T. Miller and J. W. Hedge, both promoted to Temporary Lieutenant, with seniority of Nov. 28th, and reappointed.

W. N. Lucas-Shadwell granted a temporary commission as Sub-Lieutenant (R.N.V.R.), with seniority of Nov. 28th, and appointed to "President," additional, for R.N.A.S.

Royal Flying Corps (Military Wing).

THE following appeared in a supplement to the *London Gazette* issued on the 24th ult. :—

Flying Officers.—Nov. 6th, 1915: Lieut. Ian Macdonell, Lord Strathcona's Horse (Royal Canadians); Second Lieut. E. A. Kelly, Special Reserve; Second Lieut. E. W. Barrett, Special Reserve. Nov. 10th, 1915: Temporary Second Lieut. G. B. Ward, attached Prince of Wales's (North Staffordshire Regt.), and to be transferred to the General List; Second Lieut. A. L. Macdonald, Black Watch (Royal Highlanders), and to be seconded. Nov. 11th, 1915: Second Lieut. A. W. C. V. Parr, Rifle Brigade (Prince Consort's Own), and to be seconded; Second Lieut. D. Cleaver, Special Reserve.

Supplementary to Regular Corps.—Second Lieut. (on probation) Digby Cleaver is confirmed in his rank.

William W. Stenning to be Second Lieutenant (on probation). Nov. 2nd, 1915.

The following appeared in a supplement to the *London Gazette* issued on the 25th ult. :—

Flight-Commanders.—Lieut. E. J. E. Hawkins, Indian Army Reserve of Officers, from a Balloon Officer, and to be Temporary Captain whilst so employed; Nov. 6th, 1915. Capt. K. P. Atkinson, R.A., from an Equipment Officer; Nov. 7th, 1915. Capt. Hon. L. J. E. Twisleton-Wykeham-Fiennes, Oxfordshire and Buckinghamshire L.I. (T.F.), from a Flying Officer; Nov. 10th, 1915. Second Lieut. A. C. Wright, Special Reserve, from a Flying Officer, and to be Temporary Captain whilst so employed; Nov. 13th, 1915.

Supplementary to Regular Corps.—Second Lieut. (on probation) Walter D. M. Bell is confirmed in his rank.

To be Second Lieutenants (on probation): William H. Date; Nov. 11th, 1915. Humphrey Baynes; Nov. 15th, 1915.

The following appeared in a supplement to the *London Gazette* issued on the 27th ult. :—

Memoranda.—1st Class Air-Mechanic C. H. Chapman, from R.F.C., to be Temporary Second Lieutenant. Sept. 30th, 1915. (Substituted for the notification which appeared in the *Gazette* of Nov. 22nd, 1915.)

Supplementary to Regular Corps.—Gordon Iredell to be Second Lieutenant (on probation). Nov. 3rd, 1915.

The following appeared in a supplement to the *London Gazette* issued on the 29th ult. :—

His Majesty the King has been graciously pleased to approve or the undermentioned promotion :—

Brevet Colonel.—Major (Temporary Lieut.-Col.) D. S. MacInnes, D.S.O., Royal Engineers, Temporary Assistant Director of Military Aeronautics, War Office.

Supplementary to Regular Corps.—Second Lieutenants (on probation) confirmed in their rank: Cecil Faber, Ernest Selby, and John B. Fitzsimons.

Alfred E. Thorne to be Second Lieutenant (on probation). Nov. 11th, 1915.

THE ROLL OF HONOUR.

THE Secretary of the Admiralty has announced the following casualty :—

Under date November 26th, Eastern Mediterranean :

Killed.

Flight Sub-Lieutenant John H. Rose, R.N.

The following casualty in the Expeditionary Force has been officially reported from General Headquarters :—

Undated :

Previously Officially reported Missing, now Unofficially reported Prisoner of War.

Second Lieutenant J. B. Robinson, Royal Flying Corps.

The following casualty in the Mediterranean Expeditionary Force has been reported :—

Undated :

Prisoner of War.

Lieutenant Sir R. J. Paul, Bart., General List, New Armies, attached R.F.C.

The following casualty in the Australian Imperial Force with the Mediterranean Expeditionary Force is reported :—

⊗ ⊗

Another Aeroplane from the Argentine.

THROUGH the League of Empire, the British residents in the Argentine have presented another aeroplane to the British Government. The first aeroplane presented was named "River Plate" on Saturday by Mrs. Bilboa de Bruden, wife of the chairman of the British Society in the Argentine, those present at the ceremony including Lord Meath and Sir Philip Hutchins.

An Aeroplane from the Gold Coast.

THE Government of the Gold Coast has received a further

Undated :

Officially reported Missing, and Unofficially reported Prisoner of War.

Captain T. W. White, Australian Flying Corps.

Undated :

Previously reported Missing, now reported Wounded and Prisoner of War.

Captain C. C. Darley, R.F.A. and R.F.C.

Officers previously reported Missing, now reported Prisoners of War.

Second Lieutenant H. W. Medlicott, Royal Flying Corps.

Second Lieutenant R. J. Slade, Army Cyclist Corps, attached R.F.C.

The following casualty in the Canadian Contingent with the Expeditionary Force has been reported :—

Previously officially reported Missing, now unofficially reported Prisoner of War.

Lieutenant D. Leeson, 7th Infantry, attached R.F.C.

It has been unofficially announced that Second Lieutenant E. J. Fulton, Duke of York's Own Lancers and R.F.C., reported missing at Ctesiphon, is a prisoner in Bagdad.

It is also unofficially announced that Lieutenant Bell-Irving was the officer killed in the aeroplane accident at Norwich recently.

⊗ ⊗

contribution of £1,500 for the purchase of an aeroplane to be presented to the Royal Flying Corps. This sum has been given by the Omanhene and people of the division of Akim Abuakwa, in addition to many other generous contributions to various funds.

Dutch Intern German Seaplane.

IT was reported from The Hague on November 26th that the German seaplane, with its occupants, which landed on the 21st on the island of Schiermonnikoog, has been interned by the Dutch Government.

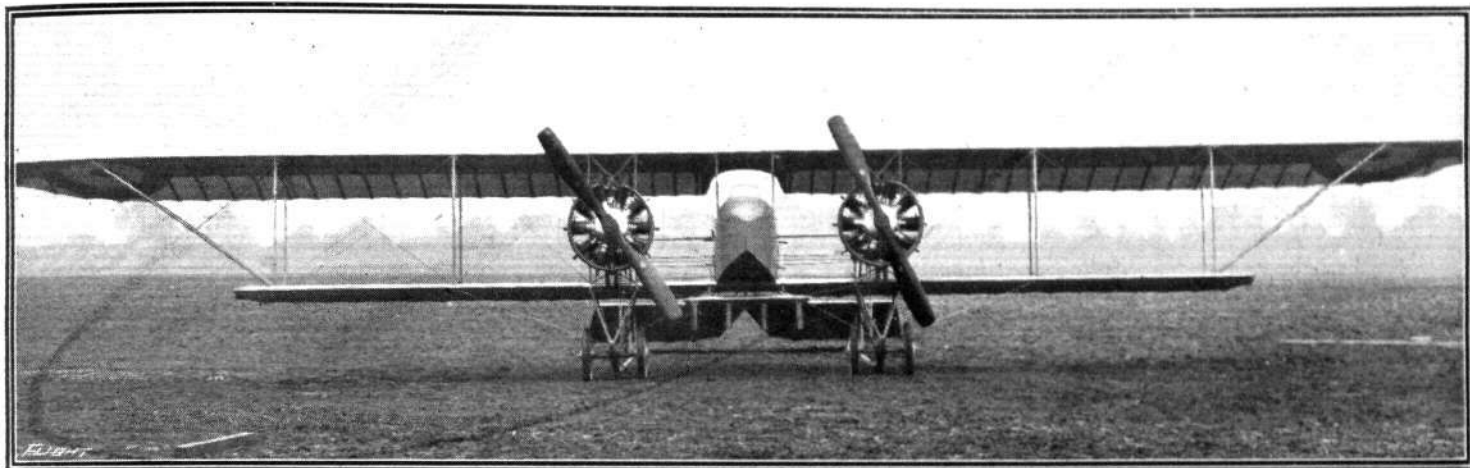


WITH THE BRITISH FORCES IN THE DARDANELLES.—A striking picture of troops on the way to the firing line, passing one of our aircraft. Note sand clouds, one of the very unpleasant features of the war in Gallipoli.

THE BRITISH-BUILT TWIN-ENGINE CAUDRON BIPLANE.

AFTER the success attained by the original French twin-engined Caudron biplanes, it is not surprising that the British Caudron Co. turned their attention to the production of similar machines; and, judging from the air-work

the past, will in all probability lie along the lines of the aeroplane with two or more engines has always appeared natural to us, partly on account of the distribution of the main load thereby obtained (although we are aware that

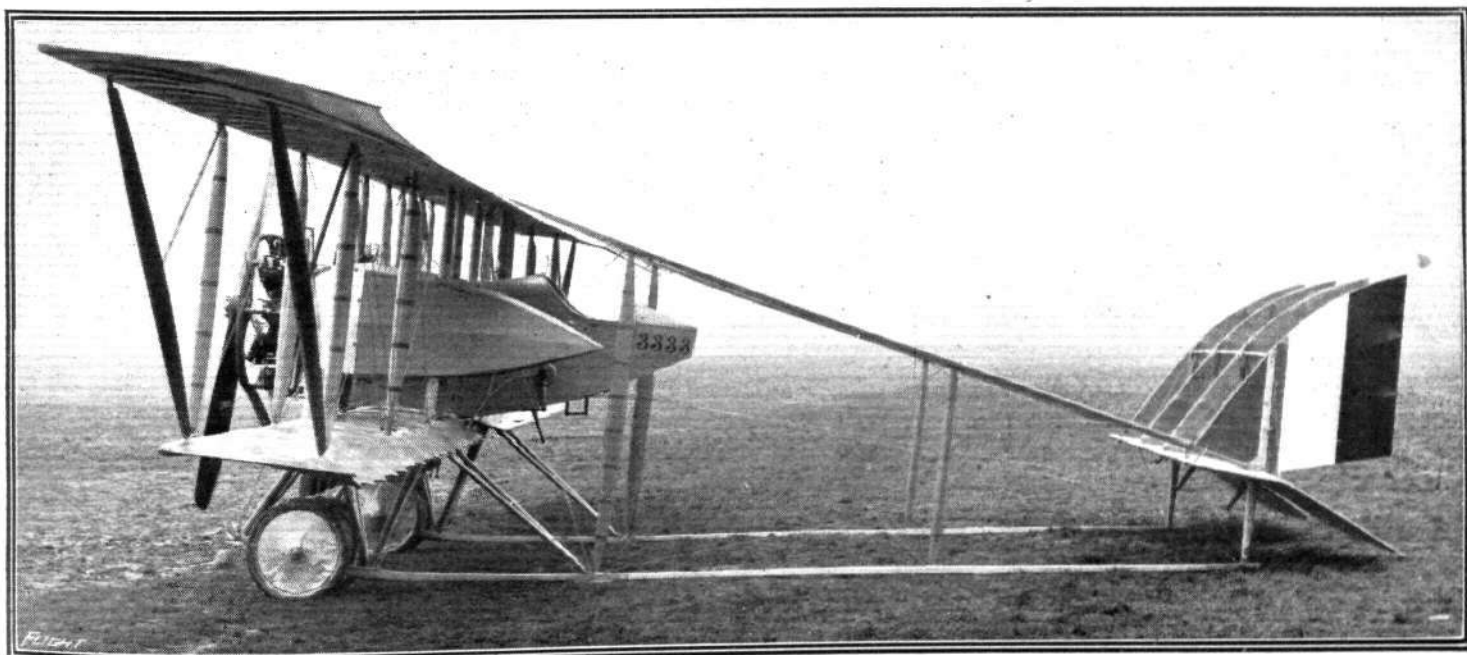


Copyright, F. N. Birkett, from the F.N.B. Series.
The twin-engined Caudron from in front.

that the first of the British-built biplanes has already done during the comparatively short period since it was first tested, there seems to be every reason to expect that it will worthily uphold the reputation established by its French prototypes.

During the preliminary trials carried out a short time ago, the machine fulfilled in every way the expectations of its constructors. Without giving actual figures, it is possible to state that carrying capacity, speed, and climb are all very good, and the acquisition of a number of

this advantage is accompanied by certain disadvantages) and partly because this arrangement allows of using the types of engines already available when high power is desired. Another point in favour of the employment of two or more engines, and one which, by the way, has been most forcibly demonstrated by one of the French prototypes of the machine under review, and illustrated in our columns not long ago, is that in this way putting all one's eggs into one basket is avoided. Should one engine peter out, either owing to internal trouble or to



Copyright, F. N. Birkett, from the F.N.B. Series.
Side view of the twin-engined Caudron.

machines of this type should prove a valuable addition to the equipment of our Air Services.

That the development of the large machine of the future, as we have stated on more than one occasion in

damage by hostile shells, the other will give sufficient power to enable the pilot to regain his own lines under circumstances when this would have been impossible even with the flattest glide of a single-engined machine.

However, reverting to the first "twin" built by the British Caudron Co., our readers may form a very good opinion of its general arrangement from the accompanying photographs. Each of the Anzani engines is mounted in a little *nacelle*, which serves the double purpose of supporting the engine and its tanks, enclosing the latter in a streamline casing. The method of supporting each engine on one half of the chassis by "Vee"

tail plane, the angle of incidence of which is adjustable, is surmounted by four small triangular fins to which are hinged the four rudders. This large rudder area has, of course, been necessitated by the extra amount of vertical side area presented by the three *nacelles*, and also partly by the fact that the two inner rudders do not receive any of the "slip" from the propellers. When flying with only one engine running a large rudder area is also

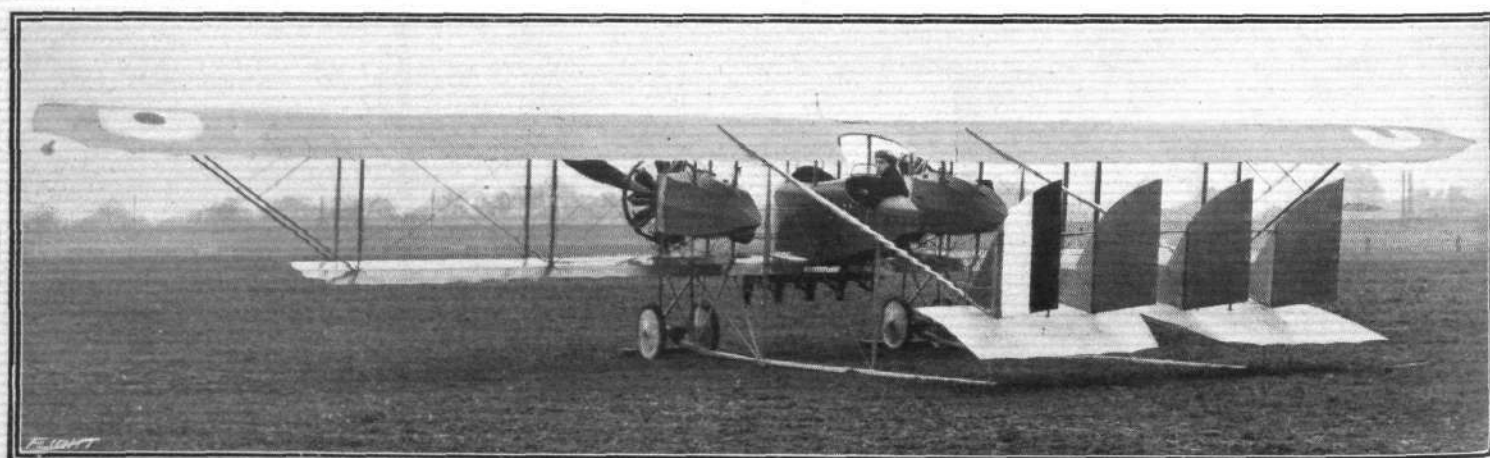


Three-quarter view from in front of the twin-engined Caudron.

struts is one of the many good points of this machine, forming, as it does, a structure of great strength. Pilot and observer are comfortably installed in the central *nacelle*, both obtaining a very good view forward as well as downward on account of their respective positions.

Apart from the question of engines there is no radical departure from ordinary Caudron practice. The main planes are characterised by the same flexible trailing edge which has always been one of the outstanding features of Caudron machines, and one to which, no doubt, they owe a large proportion of their good stability. As in earlier models, the upper plane is of considerably greater span than the lower, the overhang

essential in order to counteract the turning couple. Owing to the long skids, which act as very efficient brakes when landing, the twin-engined Caudron biplane pulls up comparatively quickly, an advantage not otherwise easily obtained, as will be readily understood when it is considered that the momentum of such a great mass as that presented by two big engines, pilot and observer, and the weight of the machine itself, is of a very considerable magnitude. Constructionally the Caudron "Twin" is exceedingly well made, the workmanship and finish being of a very high standard. Some of the detail fittings, of which no description may be given at present, are highly ingenious, and are evidently the work of men



Three-quarter view from the rear of the twin-engined Caudron. *Copyright, F. N. Birkett, from the F.N.B. Series.*

being braced by struts running out diagonally from the outer inter-plane struts. One departure from standard Caudron practice will be noticed in the reduction of the amount of trailing edge of the lower plane.

From the accompanying illustrations it will be seen that the usual flexible elevator has been discarded and in its stead one of the hinged, divided type fitted. The

who are experts in their own particular line of work. In conclusion, we wish to congratulate the British Caudron Co. on this very fine piece of work, and would express the hope that this machine may be followed by many more, and that further development along the same lines may be made to the mutual benefit of our Air Services and the Caudron Co.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

SPECIAL COMMITTEE MEETING.

A SPECIAL MEETING of The Committee was held on Tuesday, November 30th, 1915, when there were present: Prof. A. K. Huntington, in the Chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Mr. G. B. Cockburn, Squadron-Commander F. K. McClean, R.N.A.S., Flight-Lieutenant C. F. Pollock, R.N.A.S., and the Assistant Secretary.

Death of Lieut.-Col. J. D. B. Fulton, C.B., R.F.A.—On the motion of the Chairman, the following Resolution was unanimously passed:—

"The Committee of the Royal Aero Club desires to place on record its deep regret at the death of the late Lieut.-Col. J. D. B. Fulton, C.B., R.F.A., who had been a Member of The Committee of the Club since 1912, and a Member of the Public Safety and Accidents Investigation Committee from its inception, and at the same time to express its high appreciation of the great services he rendered to aviation in this Country from the earliest days."

Election of Members.—The following New Members were elected:—

George Harold Mansfield.
Oswald Lawrence Mellersh.
Edward Bertram Parker.
Hugh Rounthwaite.
Lieut. William Higley Sayers, R.N.V.R.
Capt. Barrington Clement Wells (Essex Regt.).

Aviators' Certificates.—The granting of Aviators' Certificates Nos. 2023 to 2046 was confirmed.

The granting of the following Aviators' Certificates was confirmed:—

- 2047 Robert Wilson (Caudron Biplane, Cramond Sands, Edinburgh). July 8th, 1914
- 2048 Capt. Walter Gerard Palmer (113th Infantry, Indian Army) (Maurice Farman Biplane, Military Flying Park, Basra, Mesopotamia). Sept. 25th, 1915.
- 2049 Flight Sub-Lieut. Reginald Eustace Greensmith, R.N.A.S. (Caudron Biplane, Royal Naval Flying School, Eastchurch). Oct. 18th, 1915.
- 2050 Flight Sub-Lieut. Harold Percy Watson, R.N.A.S. (Grahame-White Biplane, Royal Naval Air Station, Eastbourne). Oct. 27th, 1915.
- 2051 Flight Sub-Lieut. Henry Alexander James Wilson, R.N.A.S. (Grahame-White Biplane, Royal Naval Air Station, Eastbourne). Oct. 27th, 1915.
- 2052 2nd Lieut. Durham Donald George Hall (3rd Yorkshire Regt.) (Maurice Farman Biplane, Military School, Norwich). Oct. 29th, 1915.
- 2053 Capt. Stuart Grant-Dalton (Yorkshire Regt.) (Maurice Farman Biplane, Military School, Shoreham). Oct. 29th, 1915.
- 2054 2nd Lieut. Harry Osbourne Hackett (11th Welsh Regt.) (Maurice Farman Biplane, Military School, Shoreham). Oct. 30th, 1915.
- 2055 Flight Sub-Lieut. Eliot Millar King, R.N.A.S. (Grahame-White Biplane, Royal Naval Air Station, Eastbourne). Nov. 3rd, 1915.
- 2056 Alexander Macdonald Shook (Curtiss Biplane, Curtiss School, Toronto, Canada). Nov. 5th, 1915.
- 2057 George Samuel Abbott (Curtiss Biplane, Curtiss School, Toronto, Canada). Nov. 8th, 1915.
- 2058 G. G. MacLennan (Curtiss Biplane, Curtiss School, Toronto, Canada). Nov. 8th, 1915.
- 2059 John Aird (Curtiss Biplane, Curtiss School, Toronto, Canada). Nov. 8th, 1915.
- 2060 Edward Gurney Ryckman (Curtiss Biplane, Curtiss School, Toronto, Canada). Nov. 11th, 1915.
- 2061 J. A. Page (Curtiss Biplane, Curtiss School, Toronto, Canada). Nov. 11th, 1915.
- 2062 A. J. Boddy (Curtiss Biplane, Curtiss School, Toronto, Canada). Nov. 11th, 1915.
- 2063 A. G. Knight (Curtiss Biplane, Curtiss School, Toronto, Canada). Nov. 11th, 1915.
- 2064 M. M. Mowat (Curtiss Biplane, Curtiss School, Toronto, Canada). Nov. 11th, 1915.
- 2065 2nd Lieut. John Sloane Anderson (9th Battn., Royal West Surrey Regt.) (Maurice Farman Biplane, Military School, Farnborough). Nov. 14th, 1915.
- 2066 R. T. Griffin (Curtiss Biplane, Curtiss School, Toronto, Canada). Nov. 14th, 1915.
- 2067 2nd Lieut. James Douglas Latta, R.F.C. (Maurice Farman Biplane, Military School, Norwich). Nov. 15th, 1915.
- 2068 John Archibald Hartcup (Maurice Farman Biplane, Military School, Shoreham). Nov. 16th, 1915.
- 2069 Flight Sub-Lieut. Bernard Charles Henry Cross, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). Nov. 17th, 1915.
- 2070 Flight Sub-Lieut. Cecil Henry FitzHerbert, R.N.A.S. (Grahame-White Biplane, Royal Naval Air Station, Chingford). Nov. 17th, 1915.
- 2071 Lieut. James Kidston Law (7th Royal Fusiliers) (Maurice Farman Biplane, Military School, Norwich). Nov. 19th, 1915.
- 2072 2nd Lieut. Raymond Arthur Pierpoint (Royal Berkshire Regt.) (Maurice Farman Biplane, Military School, Norwich). Nov. 19th, 1915.
- 2073 2nd Lieut. John Nigel MacRae (Maurice Farman Biplane, Military School, Ruislip). Nov. 20th, 1915.
- 2074 2nd Lieut. Walter George Albu (Royal Irish Fusiliers) (Maurice Farman Biplane, Military School, Birmingham). Nov. 20th, 1915.
- 2075 Edmond Kervyn (Belgian Subject) (Maurice Farman Biplane, Military School, Ruislip). Nov. 20th, 1915.
- 2076 Baron Fernand de Woot de Trixhe (Belgian Subject) (Maurice Farman Biplane, Military School, Ruislip). Nov. 21st, 1915.
- 2077 Clement van der Straeten-Best (Belgian Subject) (Maurice Farman Biplane, Military School, Ruislip). Nov. 22nd, 1915.
- 2078 2nd Lieut. Francis George Wake Marchant (West Kent Regt.) (Maurice Farman Biplane, Military School, Farnborough). Nov. 22nd, 1915.
- 2079 2nd Lieut. John Reginald Taylor (Rifle Brigade) (Maurice Farman Biplane, Military School, Farnborough). Nov. 22nd, 1915.
- 2080 2nd Lieut. Evelyn Page (Middlesex Regt.) (Maurice Farman Biplane, Military School, Farnborough). Nov. 22nd, 1915.
- 2081 G. M. Murray (Curtiss Biplane, Curtiss School, Toronto, Canada). Nov. 23rd, 1915.
- 2082 Arthur Kidner (Curtiss Biplane, Curtiss School, Toronto, Canada). Nov. 23rd, 1915.
- 2083 J. H. Drope (Curtiss Biplane, Curtiss School, Toronto, Canada). Nov. 23rd, 1915.
- 2084 N. H. McDiarmid (Curtiss Biplane, Curtiss School, Toronto, Canada). Nov. 23rd, 1915.
- 2085 D. Cushing (Curtiss Biplane, Curtiss School, Toronto, Canada). Nov. 23rd, 1915.
- 2086 Lessel Finer Hutcheon (Maurice Farman Biplane, Military School, Brooklands). Nov. 25th, 1915.
- 2087 Alfred John Johnston (Maurice Farman Biplane, Military School, Brooklands). Nov. 25th, 1915.
- 2088 Flight Sub-Lieut. Dennis Gurney Broad, R.N.A.S. (Maurice Farman Biplane, Royal Naval Air Station, Eastbourne). July 30th, 1915.
- 2089 Edward Bloomfield Waller (Curtiss Biplane, Curtiss School, Toronto, Canada). Nov. 9th, 1915.
- 2090 2nd Lieut. Henry O'Neil de Hane Segrave (2nd Batt. Warwickshire Regt.) (Maurice Farman Biplane, Central Flying School, Upavon). Nov. 19th, 1915.
- 2091 Flight Sub-Lieut. Richard Saher de Quincey Quincey, R.N.A.S. (Short Biplane, Royal Naval Flying School, Eastchurch). Nov. 20th, 1915.
- 2092 2nd Lieut. Edward Selwyn Moulton-Barrett (Seaforth Highlanders) (Maurice Farman Biplane, Military School, Birmingham). Nov. 24th, 1915.
- 2093 2nd Lieut. Geoffrey Wynne Bavin (Lincolnshire Regt.) (Maurice Farman Biplane, Military School, Farnborough). Nov. 24th, 1915.
- 2094 Henry James Liddell (Caudron Biplane, Ruffey-Baumann School, Hendon). Nov. 25th, 1915.

- 2095 Capt. Alfred Spencer Mason Summers (19th Hussars) (Beatty-Wright Biplane, Beatty School, Hendon). Nov. 25th, 1915.
- 2096 Flight Sub-Lieut. Norman Reginald Davenport, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). Nov. 25th, 1915.
- 2097 2nd Lieut. James Edward Hutton Freeman (7th Battn., Royal West Surrey Regt.) (Maurice Farman Biplane, Military School, Birmingham). Nov. 26th, 1915.
- 2098 2nd Lieut. Douglas Huon Gray (14th King's Regt.) (Maurice Farman Biplane, Military School, Birmingham). Nov. 26th, 1915.
- 2099 2nd Lieut. George Henry Nicholson (9th Batt. Royal West Surrey Regt.) (Maurice Farman Biplane, Military School, Birmingham). Nov. 26th, 1915.
- 2100 Flight Sub-Lieut. Geoffrey Moore, R.N.A.S. (Maurice Farman Biplane, Royal Naval Flying School, Eastchurch). Nov. 27th, 1915.
- 2101 John Drew (Hall Biplane, Hall School, Hendon). Nov. 27th, 1915.

The following Aviators' Certificates were granted:—

- 2102 Lieut. Cedric Ian Burrell, R.E. (Maurice Farman Biplane, Military School, Shoreham). Nov. 16th, 1915.
- 2103 2nd Lieut. John Joseph Breen (Royal Irish Regt.) (Maurice Farman Biplane, Military School, Shoreham). Nov. 18th, 1915.
- 2104 Lieut. Alistair Frederick Keble White (1/6th Suffolk Regt.) (Maurice Farman Biplane, Military School, Shoreham). Nov. 18th, 1915.
- 2105 2nd Lieut. George Philip N. Burden (Maurice Farman Biplane, Military School, Farnborough). Nov. 24th, 1915.
- 2106 William Austin Spratt (Maurice Farman Biplane, Military School, Brooklands). Nov. 26th, 1915.
- 2107 Lieut. Reginald Baynes Mansell (Maurice Farman Biplane, Military School, Shoreham). Nov. 27th, 1915.
- 2108 Flight Sub-Lieut. Leonard Gordon Scott, R.N.A.S. (Grahame-White Biplane, Royal Naval Air Station, Chingford). Nov. 27th, 1915.
- 2109 Flight Sub-Lieut. Harold Tether, R.N.A.S. (Maurice Farman Biplane, Royal Naval Air Station, Chingford). Nov. 28th, 1915.

Aeronauts' Certificates.—The granting of Aeronauts' Certificates Nos. 49 to 51 was confirmed.

The granting of the following Aeronauts' Certificates was confirmed:—

- 52 Lieut. Arthur Meredyth Wynne. Nov. 15th, 1915.

- 53 Flight Sub-Lieut. Maxwell Gordon Gill, R.N.A.S. Nov. 29th, 1915.

The following Aeronaut's Certificate was granted:—

- 54 Sub-Lieut. William Henry Wood, R.N.V.R. Nov. 30th, 1915.

Extension of the Hours of Opening the Club.

The Club is now open from 9 a.m. to 10.30 p.m. each day, including Sunday.

New Members.

Members are reminded that, according to the Rules, the Annual Subscription of any New Member they may propose, who is elected between November 1st and December 31st of this year, will cover the period up to December 31st, 1916.

THE FLYING SERVICES FUND administered by THE ROYAL AERO CLUB.

THE Flying Services Fund has been instituted by the Royal Aero Club for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependants of those who are killed.

The Fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers and men.

Forms of application for assistance can be obtained from the Royal Aero Club, 166, Piccadilly, London, W.

Subscriptions.	£	s.	d.
Total subscriptions received to Nov. 24th, 1915	10,057	12	8
Collected at the Westland Aircraft Works, Yeovil (Tenth contribution)	0	8
Staff and Workers of Gwynnes, Ltd. (Fourth contribution)	9	15

Total, December 1st, 1915 ... 10,067 16 4

B. STEVENSON, Assistant Secretary.

166, Piccadilly, W.



London Aerodrome, Collindale Avenue, Hendon.

Grahame-White Civilian School.—Straights last week with Instructor: Messrs. Gammon, Halet, Howe, Hughes, Leigh, Hathaway, Henshaw and Yates. Half circuits with Instructor: Mr. Philippi. *Brevet* tests: Mr. Horridge.

Grahame-White School (R.N.A.S.).—Straights with Instructor: Probationary Flight Sub-Lieuts. Aird, Aitken, Burden, Armitage, Horniman, Rampling and Pritchard. Circuits and eights with Instructor: Probationary Flight Sub-Lieuts. Malet, Moody, Ovens and Saint. Tickets during week: Probationary Flight Sub-Lieuts. Aplin and Davenport.

Instructors for the week: Messrs. Manton, Pashley, Russell and Winter.

Beatty School.—The following pupils were out during last week: Messrs. Baldwin, Barnes, Barrow, Begg, Bond, Brynildsen, Byrne, Collett, Cumming, Davison, Edwards, Gayner, Hodgson, Jones, Kirkwood, Murdoch, Nicholson, Onley, Overton, Owen, Podmore, Richard, Samter,

Schollaert, Smith, Whincup, Willmet, Godfrey, Williams, Paterson, Drysdale, Martin, and Capt. Summers.

The instructors were Messrs. G. W. Beatty, W. Rochekelly, R. W. Kenworthy, G. Virgilio, A. E. Mitchell, and L. L. King, the machines in use being Beatty-Wright dual control and single-seater propeller biplanes, and Caudron tractor biplanes.

Certificates were taken during the week by Capt. Summers and Messrs. Bond and Paterson on Beatty-Wright machines, and Mr. Nicholson on a Caudron machine.

Exhibition flights were given on Saturday by Messrs. Beatty, Kenworthy, and Virgilio, and on Sunday by Mr. Virgilio, and six passenger flights were taken.

Hall School.—The following pupils received instruction last week at the Hall School: With H. F. Stevens: Drew, putting in long practice flights, circuits, eights, and *vol plané* landings. With Cecil M. Hill: Manly, Wilkins, Cook, Evans, Rattray, Dresser, Shum, Butterworth, Nicolle, Dodd, Stirling, Mann, Capt. Grey, and Redford. With Drew, doing rolling practice and short



A Sextet of Pupils at the Graham-White School who have recently secured their Flying Certificates: 1. Prob. Flight Sub-Lieut. W. Man, R.N. 2. Flight Sub-Lieut. P. Welsby James, R.N.A.S. 3. Flight Sub-Lieut. J. A. Sadler, R.N.A.S. 4. Prob. Flight Sub-Lieut. B. C. H. Cross, R.N. 5. Mr. H. F. Macleod Fraser. 6. Prob. Flight Sub-Lieut. R. Graham, R.N.

flights: Cumberbirch, Arnsby, Wooley, Ormerod, Smith, Millburn, Cosgrave, Chapman, Thom, Bennett, Neil, Robert, Lieut. Cooke, Ridley, Ackroyd, and Moir.

The Royal Aero Club certificate was obtained by Drew, who has now joined the school as instructor pending his appointment.

Three new Hall tractors are now in course of construction, which, with the machines already in use, should, the Hall School claim, make them the best-equipped tractor school in England.

London and Provincial Aviation Co.—Pupils doing rolling last week: Messrs. Dawson, Loomes, Scott, Roberts, and Egelstaff. Doing straights: Messrs. Atkinson, Heyn, Thorpe, Martin, Jowett, Woods and Knowles. Doing circuits: Messrs. Burgess, Braim and Lewis.

Instructors: Messrs. W. T. Warren, M. G. Smiles, C. M. Jacques, H. Sykes and W. T. Warren, Jun.

Royal Aero Club certificates were taken this week by Lieut. Lewis and Mr. Rupert N. Braim.

Ruffy-Baumann School.—The following students have last week been flying the 50 and 60 h.p. Gnome-Caudron biplanes: Messrs. Cuthbertson, Vernon, Bolton,

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Launoit, Tomson, Laidlaw, Cox, Pauli, Hamtiaux, Dobson, Winter, Cole, De Grauw, Coppens, Griffith, Sherwood, and Liddell.

Instructors: Edouard Baumann, Felix Ruffy, Ami Baumann, and Clarence Winchester.

Mr. H. J. Liddell, of Stockton-on-Tees, completed his certificate tests by making a very fine *vol plané* from a height of a thousand feet and landing very smoothly.

Another machine is at the moment being erected, and pupils have had exceptional advantages for constructional experience.

Northern Aircraft Co., Ltd.

The Seaplane School, Windermere.—There has been no real flying weather throughout last week, mist and wind alternating.

With Instructor: Hallet (16 mins.), H. Ingham (13), Pont (5), Ruthven (12), Robertson (17), Salton (18) and Stubbs (39). With Instructor as passenger: Coats (12 mins.) and Pont (16).

Instructors: Messrs. W. Rowland Ding and J. Lankester Parker.

Machines in use: N.A.C. propeller biplane 80 Gnome and Blackburn monoplane 100 Anzani.

Rewards for Air Raid Heroes.

IN recognition of the bravery of the London fireman, J. S. Green, who died from injuries received in rescuing eighteen persons from a fire which followed on the air raid on September 8th, the Carnegie Fund Trustees have awarded an annuity of £35 and a bronze medallion to his widow. They have also arranged to pay Mrs. Green's rent.

An honorary certificate and £10 were awarded to William Arthur Goodman, a special constable, who rescued a child from the ruins of a house after an air raid on August 17th.

Poison Gas Bombs.

LECTURING on Monday before the Medical Society of London, Dr. Leonard Hill said that owing to the enormous ventilating power of the atmosphere there was no reason to fear that Zeppelins would drop poison bombs on London. The scare about "poison bombs" prevalent some months ago was unreasonable. There seemed to be no reason why recovery of the lungs should be less perfect after chlorine poisoning than after bronchial pneumonia. Emetics had

proved useful; half a pint of salt and water or 8 grains of copper sulphate, followed by large drafts of luke-warm water, were recommended.

German Aircraft and British Ship.

THE following details of an attack by three German aeroplanes on a British ship were sent by the *Daily Telegraph* correspondent at Rotterdam on November 28th:—

"The English steamer *Balgownie*, of the General Steam Navigation Company, was attacked by three German flying machines in the North Sea yesterday afternoon. The vessel was on a voyage from London to Rotterdam, and the attack took place near the North Hinder. Although it only lasted twenty minutes, it was of a most ferocious character. Circling around the ship the three machines opened fire with machine-guns and rifles simultaneously, dropping bombs when crossing the steamer.

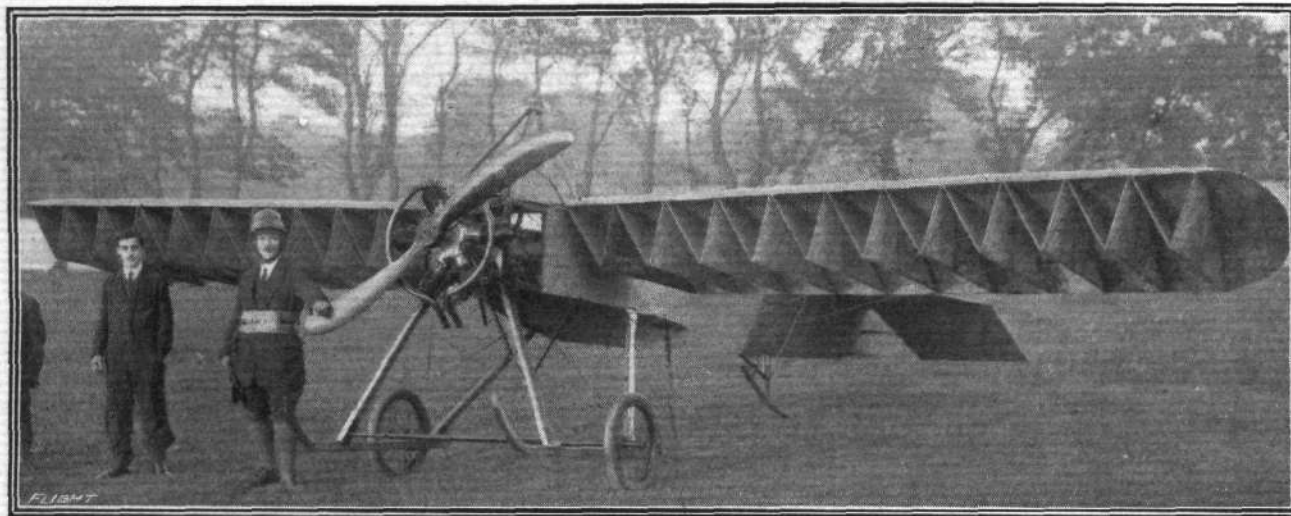
"Several of the bombs fell close alongside, but no damage was done. A rain of bullets from machine-guns and rifles struck the sides of the steamer, but none of the crew was hit, nor was any real damage done."

AN ORIGINAL IRISH MONOPLANE.

In these days when the tendency is everywhere towards standardisation it is quite refreshing to be reminded that, great as have been the results achieved with types of wing sections that do not differ greatly among themselves, there are people who do not entirely agree that development is travelling entirely along the right track. One of those, who not only offers this negative criticism but who is of the opinion that he has found a better form of wing, is Mr. J. Corder, of John Street, Londonderry, who has for a number of years been working upon lines of his

a tail of similar construction to that of the main planes and an open *fuselage*. Later on the body was covered in in order to improve the speed. A form of *aileron* was employed for steering, no vertical rudder being fitted. Engines of various types and h.p. were tried, and the undercarriage redesigned time after time. "Straights" were made, mere hops it is true, but the machine got off the ground. Then turns were attempted and, according to Mr. Corder, with good results.

In its present form the Corder monoplane may be

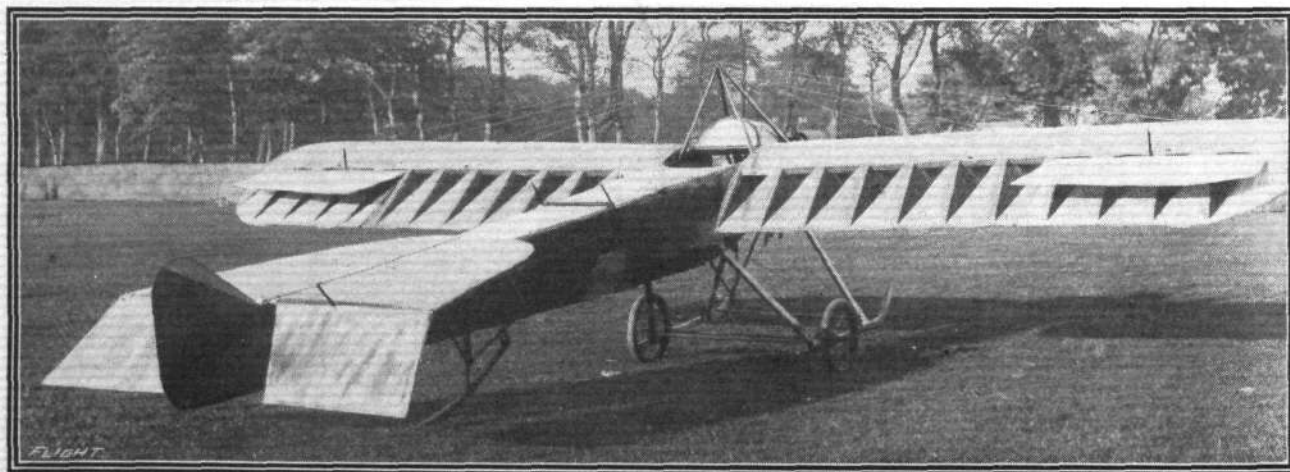


Three-quarter front view of the Corder monoplane.

own, attacking the problem, rightly or wrongly, in an entirely different way from what has come to be considered orthodox. Mr. Corder informs us that his machine has done several short flights, during which, he says, the machine was found to possess a very good speed range, leaving the ground at something like 15 m.p.h., while the maximum speed, he states, is very high, how high we are not in a position to say. She also appears, from the short flights possible in the restricted ground available, to have a reasonably good climbing power.

said to represent a concession to orthodoxy as far as the body, tail and undercarriage are concerned, but the peculiar wing construction has been retained. Various materials have been tried, the wings having at various times been built up of three-ply wood, covering and all, and at other times a skeleton framework covered with fabric has formed the lifting surfaces. However, in general principle the *form* of the wings, if not the construction, has been retained.

It is a little difficult to explain the arrangement in



Three-quarter rear view of the Corder monoplane.

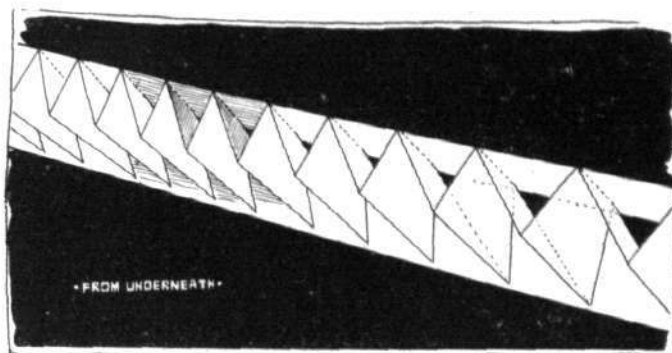
In its present form the Corder monoplane is the result of years of experiments, first with models and later with full size machines to which reference in the past has been made in "FLIGHT." As experience dictated these were altered and improved, the earlier ones having

words, but the accompanying sketch will, we think, make it perfectly clear. As to the action of this peculiar wing form one cannot always follow the inventor in his claims that it obtains a better "grip" on the air, gives less resistance, more area and better speed range. As regards the

first claim. By "grip" we take it that the inventor means to indicate that the suction on the upper surface of the wing and the pressure on the lower surface are greater than can be obtained with the ordinary form of wing section. With regard to the upper surface it would appear to us that the region of rarified air or "partial vacuum" above the plane would be filled up by the air rushing through the triangular openings below the plane, and that therefore the resulting lift would be reduced. Again, the lower surface may be said to consist of a series of alternate dihedral surfaces tapering towards the rear and negatively dihedral surfaces flattening out towards the rear, which, although certainly presenting a greater surface, would also seem to offer more resistance. If the maximum speed can be attained we quite agree that it should be possible to bring the minimum speed down to a very low figure, especially as the *aileron*s, if pulled down simultaneously, will, by closing some of the pockets in the rear portion of the wing, act as a very powerful brake. That, as Mr. Cordner claims, the danger of "side slipping" is greatly reduced, if not altogether eliminated, seems reasonable enough in view of the great amount of more or less vertical surface presented by the pockets of the wings. Whatever one's opinion of the merits of this original wing form, it certainly should be given a thorough trial in practice, as for instance by building a pair of

wings of the same span and chord as those of some well-known machine when the results could be directly compared.

Regarding the rest of the machine the Cordner monoplane presents nothing startling in the way of deviations



Sketch showing peculiar wing design of the Cordner monoplane.

from ordinary practice. It is fitted with a new 40 h.p. Anzani engine, and we understand that Mr. Cordner is open to consider the sale of both the machine and patents covering the wing design.



In spite of the intense cold last Saturday afternoon the proceedings at Hendon were fairly lively. The first item on the programme was school-work, when most of the "flying" was done on the ground or some couple of inches up. Then some Curtiss tractors and a Maurice Farman short-horn came out and flew somewhat higher, whilst the G.W. "Boxers" Marcus D. Manton, M. Osipenko, C. Pashley, &c. got going on the 60 h.p. (Le Rhone) 'buses. Considerable interest was centred upon an R.E.7 that was moored alongside the paddock and which had been flown over that day by Second-Lieut. F. G. Dunn—one of the pre-war-day Hendon pilots who has been doing hard and good work at the front since the commencement of hostilities. This R.E.7 was, I think, constructed by the famous motor firm of Napier, and was one of the "Overseas" machines. It is fitted with a Beadmore engine, and presented as fine an example of aeroplane construction as one could wish to see. Friend J. H. Moore, still partaking of "an airman's holiday," gave us a fine display of exhibition flying on his 55 h.p. biplane, and the 100 h.p. de Havilland pusher scout came out and put up a good show of speed work, steep climbs, &c. Interest in all else was then thrown to the winds, for the first British-built twin-engine Caudron made its appearance. Its first trials were carried out on the Thursday previous, René Desoutter being in the pilot's seat. As a rule it is not wise to expect too much from first trials—especially in the case of a machine which is the first of its *type* to be turned out from the works—but on this occasion the results were

highly satisfactory and encouraging. Unfortunately, it is not permissible to give here the figures of the performances of this machine, but it can be said that its combined speed and climbing capabilities with full load (well over 1,000 lbs.) are in the neighbourhood of record. Whilst these trials were progressing an FE 2b "pusher," the product of Messrs. Boulton and Paul, of Norwich, who have certainly at the first try made good in the aviation industry, was being flown around by Second-Lieutenant Dunn, and an opportunity was thus afforded of comparing their respective speeds. Opinions are divided as to which can claim to be the faster, but I think on this particular occasion the "Caudrons have it," although it is hardly fair really to decide one way or the other as both pilots claimed that they had their engines throttled down and not going all out. Anyway, they both put up "some speed" at all events. But to return to the Caudron; the next day, Friday, it successfully passed its acceptance tests and was duly handed over to the Admiralty, and on Saturday afternoon was officially put through various evolutions to the admiration of the on-lookers. Here's congratulations to the British Caudron Co., may they turn out many more such machines, each one better than the other!

Second-Lieutenant R. H. Carr, late of Hendon, was another visitor at the aerodrome on Saturday afternoon, and he too had much of interest to tell.

On Sunday many flights were put up by several of the Hendon pilots, those most in evidence being Manton, Osipenko, Pashley and Winter on 50 h.p. and 60 h.p.

G.-W. 'buses, G. Virgilio on the 50 h.p. (Gnome) Beatty-Caudron, and others whom I could not distinguish. There was also some school-work in progress.

Last week the perpetrator of "Flying at Hendon" referred to the visit of a strange machine resembling a German arrowplane, but which was said to be the

Handley Page biplane. We have since learned that he was wrongly informed, and that the machine in question was one from across the Atlantic, the 150 h.p. (Hall-Scott) Sloan-Day tractor arrowplane. We, therefore, offer our apologies to those concerned, and trust that the slip will lead to no complications.



"Oh, gentle lady, do not put me to 't,
For I am nothing, if not *critical*."

I SHOULD not shine as a critic. My pen lacks that pretty twist that shall make it mightier than the sword. The words of Shakespeare heading this article shall never apply to me.

I cannot even, with full justice to myself, criticise the reason why I do not criticise, failing to recognise, as I will admit, whether my own skill in matters is insufficient to justify me in criticising the works of others, or whether, having that skill, I yet refrain, from humanitarian motives.

Again, it may be that I am afraid to endeavour to foist my opinion, my self-valued opinion, on others by blatant blare, even though for the moment I shine as an oracle, for fear of possibilities arising demanding withdrawal at a later period, though that withdrawal be signified only by silence.

It is possible, of course, that I don't know, and know that I don't know. Anyway, I shall never shine as a critic.

Edward Bulwer Lytton's "The pen is mightier than the sword" has been so often quoted as an excuse for journalistic excesses, that one has become apt to accept it as it stands. It reads, with its context:—

"Beneath the rule of men *entirely great*,
The pen is mightier than the sword."

The italics are mine, as is also the understanding of the inner meaning of the words. And recognising that I am not entirely great, I hesitate to criticise. It is well for me that light matter only is required of me, for do I set out to criticise, I simply descend into light-hearted banter. Were I a critic, and also had the ear of one of the nine goddesses, I would, with apologies to Pope, cry:—

"Dreamer commands; your aid, O Muses, bring;
What Muse for Dreamer can refuse to sing?"

And the song should be:—

Mighty Dreamer! in your great Reflections;
Critic! a little help bestow;
We do not know—we do not know.
Show us the way; point out direction;
(That is, if you have no objection)
Teach us, we crave, to cleave the upper air,
You who never have been there.

All Powerful! in your armed-chair;
Critic! a little help bestow
On we poor workers here below.
Encourage us with words of wisdom, fair,
(That is, if you have them to spare)
And let no breath of stinging censure drop;
You who never swung a prop.

It is not the critic who counts, be he beneath the men entirely great, nor the man who laughs to see how the strong horse strains on the hill: better he put a hand to the spokes.

All honour to the doer of deeds, even could he have done better. Credit to the man in the arena, whose face is hidden by bloody-sweat and dust. Do he but entangle his enemy in his net, he shall have thumbs down to his adversary: let him but slip in his casting, and the broadsword shall enter his valiant breast by command. For though they sit in high places, well out of the fray, yet they shall decide, for they are the critics.

Who aims and falls short again and again is yet advancing the grand cause, because there is no effort without error and shortcomings, and no great achievement was ever accomplished without both.

The man who spends his money and his time in attempting to practicalise his theories has my respect as the doer of deeds, and though he fail in the main, he does not fail entirely, nor is it certain but that his seeming failure be the first step to real success.

The principle of Journalism Aviatric, as I understand it, is to look after aviation generally, nor does it appear to me to be unreasonable to extend the welcome hand to one introducing a machine of an entirely new type to the world of aeronautics, irrespective whether any material advantage accrue personally. I would not presume to suppose I could advocate its introduction into the Service, for I am not placed in a high position. Such advocating, were it printed in this page, would carry weight with it equal to that registered on the beam were my paragraph cut out and weighed.

Moreover, it is just possible that the service would not accept in grateful manner their self-appointed advocate.

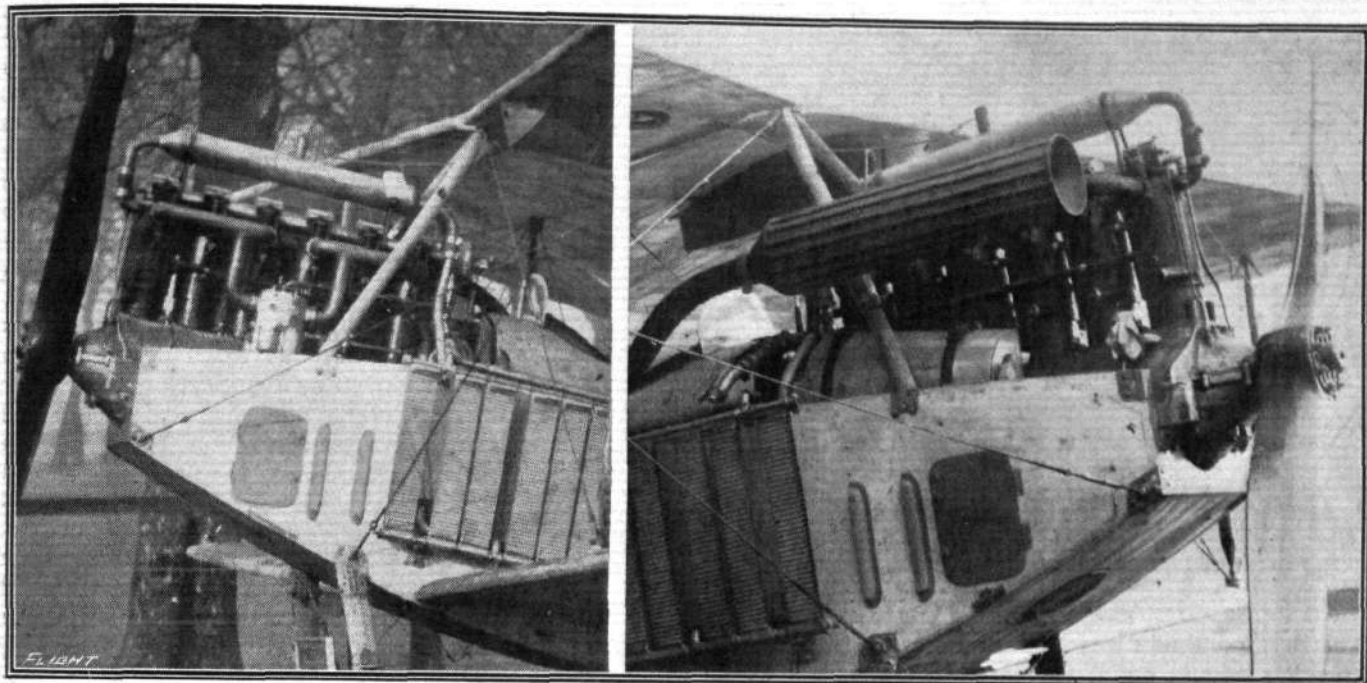
Should, however, such a job be going-a-begging at a later period, I trust those in authority will remember me, and for that reason I beg to hand in my card.

I am entirely IT.
I am the Dreamer,
Noted scribe, and wit.
On matters highly technical,
Aviatric or electrical,
I am entirely IT.
Nor care I for the other side,
Who think they know a bit.
I would guard the Services;
Be an acquisition.
All machines I deftly scan,
Length and chord and gap and span.
I criticise transmission;
And smile to see the makers squirm
Beneath my inquisition.
I am entirely IT.

THE MERCEDES ENGINES ON THE CAPTURED AEROPLANES.

ONE cannot, of course, know much of an engine from its exterior, and so far it has only been possible to obtain an outside view of those Mercedes engines with which two of the German aeroplanes exhibited at the Horse Guards Parade are fitted.

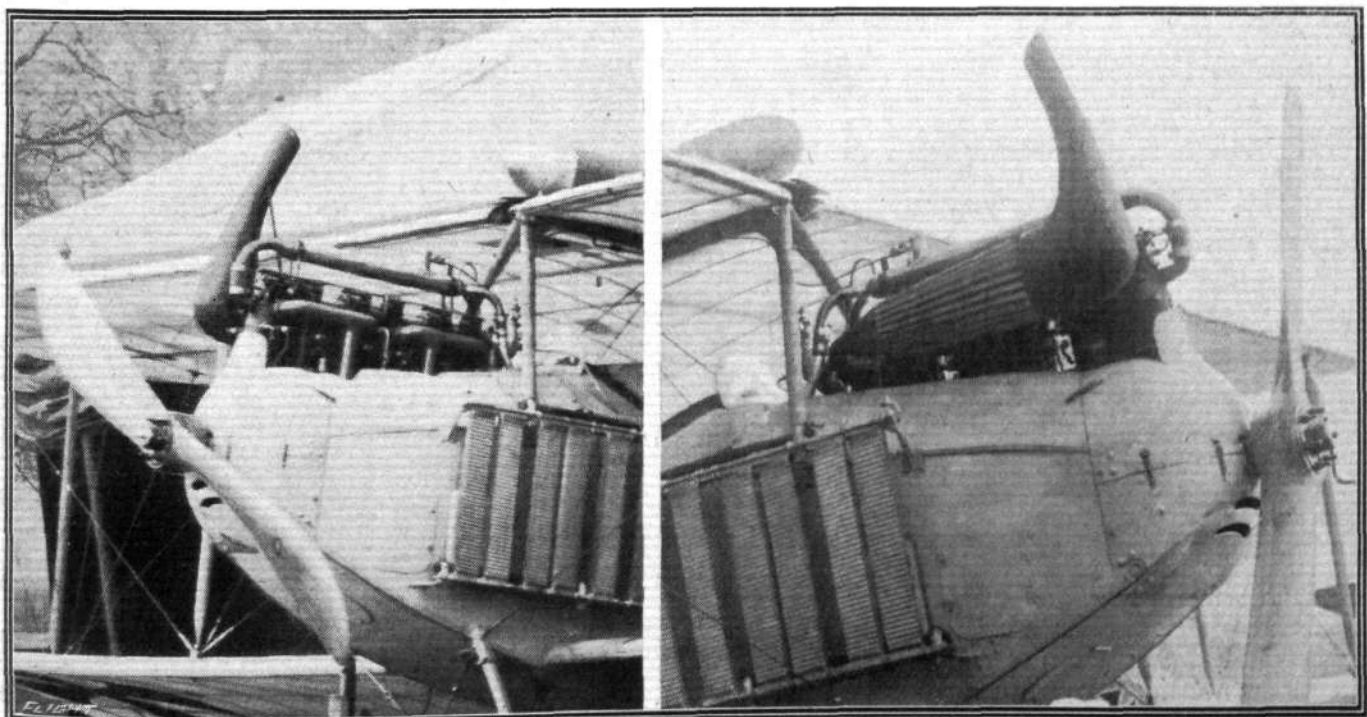
It is evident that the aim of the designers of the Mercedes engines has been that of reliability—and scarcely anything else. The two, though not exactly similar the one to the other, differ radically in no visible respect from those with which we were acquainted three



The 160 h.p. Mercedes engine on the captured German Albatros fighting biplane, on view at the Horse Guards Parade.

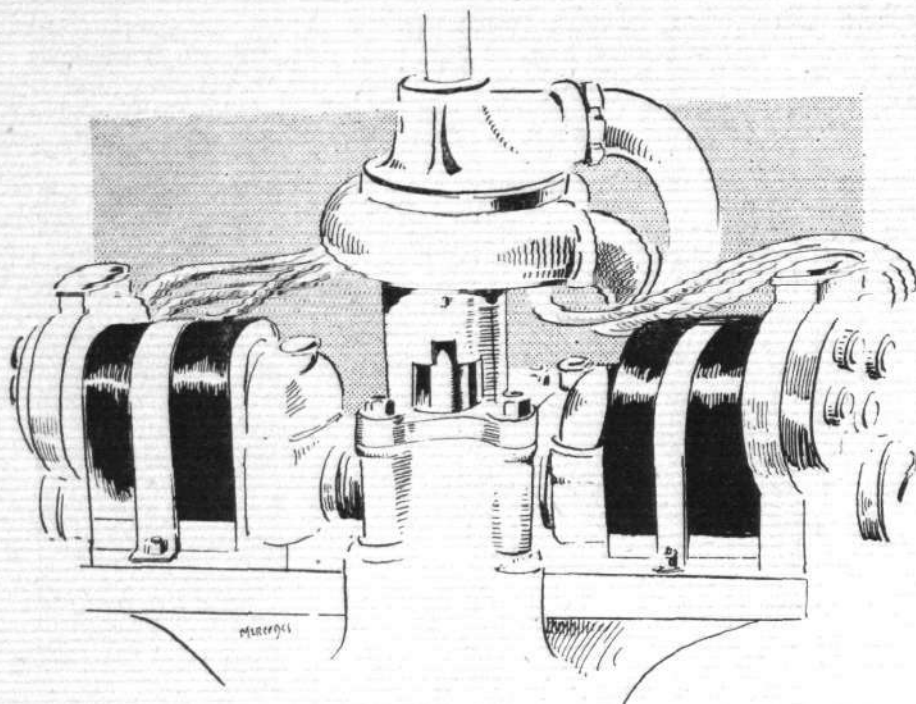
From what it is possible to see under these conditions, however, we are not in the least inclined to doubt that our own engineers are capable of building engines in every way equal—on paper and in actual practice—with those motors.

or four years ago, though it would be absurd to suggest that the experience gained during that time has not been responsible for considerable improvement, especially such as would tend to the enhancement of the basic *motif* in design—*i.e.*, reliability.



The smaller Mercedes engine, rated at 128 h.p., on the Albatros two-seater reconnaissance biplane on the Horse Guards Parade.

Solidity of construction is indeed the most striking characteristic, the base-chamber of the larger model in particular being a massive aluminium two-piece casting.



Arrangement of the centrifugal pump and the two magnetos on the Mercedes engines.

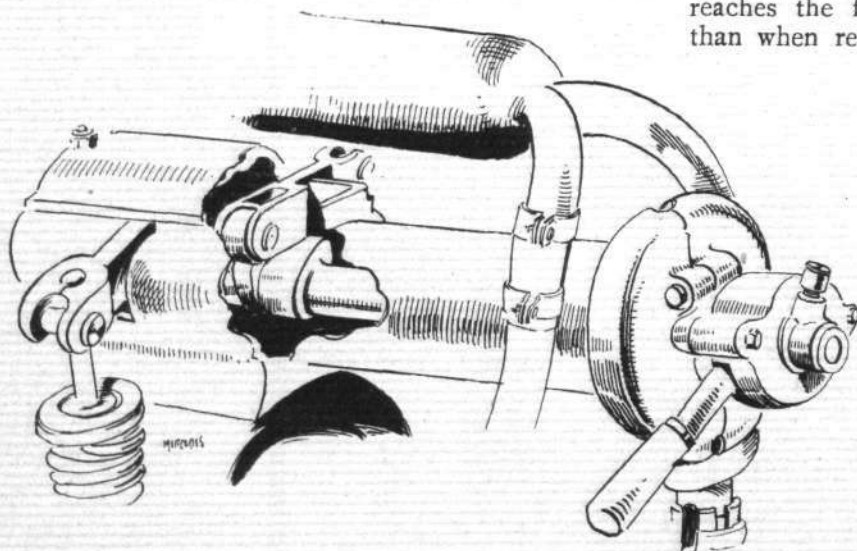
This has no doubt been found necessary in order to provide sufficient stiffness or rigidity, the overall length of the crankshaft being considerable. In this model, rated at 160 h.p., the cylinders are mounted separately, and there would, therefore, it goes almost without saying, be a bearing for the crankshaft between each crankthrow, or seven in all. Though, of course, such an object or quality cannot be revealed merely by inspection, it is certain that balance has received the most careful thought and skill, since this is a most important factor making for reliability as well as propeller efficiency. So far as one

pression device employed as a means of facilitating starting, nor indeed in the use of two magnetos for the ignition, and two carburettors for the supply of combustible mixture, and these are the only essential points wherein the present Mercedes engine differs visibly from the normal six-cylinder motor car engine.

In the case of the smaller of the two models, which is rated at 128 h.p. at 1,400 r.p.m., ordinary motor car practice is, if possible, even more closely adhered to, since in this instance the cylinders are cast in pairs, and there is apparently no half-compression device. Except in these respects, however, and, of course, that of size, the two engines appear practically identical, so that the following notes will apply to both. Apparently of cast-iron, the cylinders are cast in one with their water jacket, and have no evidence of being abnormally light. The camshaft, as we have said, lies above the cylinder heads, and is driven by a vertical shaft from the rear end of the crankshaft. On either side of the vertical shaft is a Bosch magneto with the contact-breaker box facing outwards, the armature spindles presumably being driven from the one worm or bevel on the said shaft, though, as the latter is enclosed, it is not possible to speak definitely on this point without closer inspection.

The h.t. leads are taken to two sets of plugs, these being situated on opposite sides of the cylinders.

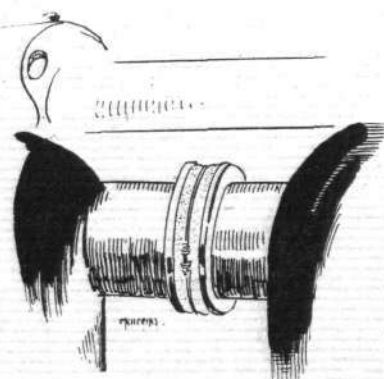
Above the magneto driving gear on the vertical shaft is a horizontal centrifugal pump for circulating the cooling water, which, as mounted in the aeroplane, is contained in a tank suspended some distance above the engine. A point to notice and which may be adversely criticised in connection with the circulation is that the cylinders are in series: that is to say, the water is led first to one cylinder—the rear—thence to the next and so on, and thus the temperature of the water by the time it reaches the foremost cylinder is considerably higher than when reaching the first; or, in other words, the cylinders are unequally cooled. In actual practice, probably, this is no great drawback, since the differ-



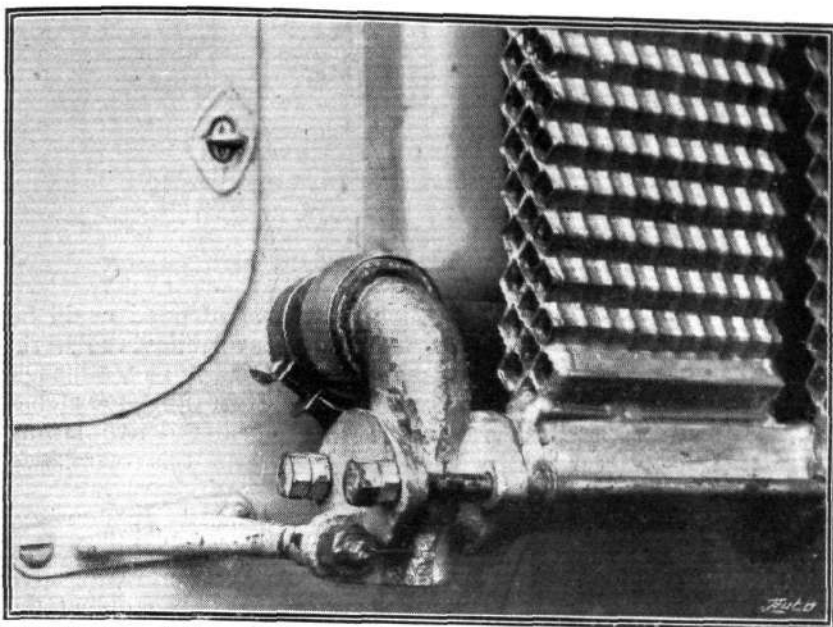
The overhead valve gear on the 160 h.p. Mercedes engine, drawn more or less diagrammatically.

can see there is not a feature of the engine but what, even if not usual, is at least common even in car practice. There is nothing new, of course, in casting the cylinders separately, neither is there anything out of the ordinary in overhead valve gear and valves, nor in the half-com-

ence may be just counteracted by the difference in cooling resulting from the slip stream of the propeller and the forward motion of the machine as a whole, since in this case it is the front cylinder that receives most of the benefit, those in rear a decreased cooling effect



Sketch showing the water connection between adjacent cylinders of the 160 h.p. Mercedes engine.



Detail view of the radiator on the captured German machines.—It will be seen that it is constructed in easily removed sections, enabling the cooling area to be increased or decreased with little trouble.

corresponding to their order. A branch pipe is led to the jacket surrounding the mixing-chambers of the dual carburettor, while a further point of interest in the system is that the radiator is composed of a number of units of which any one or more can be thrown out of circuit. Apparently this can only be done, however, when the machine is on *terra firma*, no provision being made for the pilot regulating the temperature of the water in this way from his seat while *en route*.

At the top of the vertical shaft is carried a large bevel crown wheel which engages with a pinion on the camshaft, both being enclosed in an oil-tight case. Inside this case also is a quick-screw thread arrangement by means of which the camshaft may be slid longitudinally a limited distance in its bearings, this being accomplished by moving to the left a lever projecting from the case, the mesh of the bevels being at the same time undisturbed, which is done presumably by making the spindle of the

two nuts. These boxes are supplied with oil by means of a hand-operated force pump under the control of the pilot or observer, and can therefore be replenished while

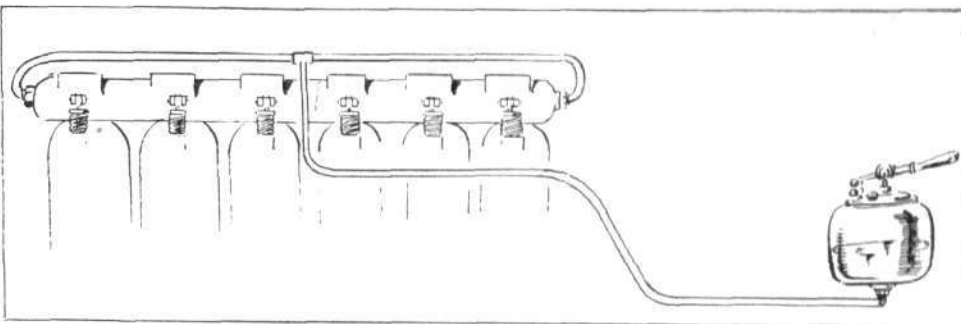
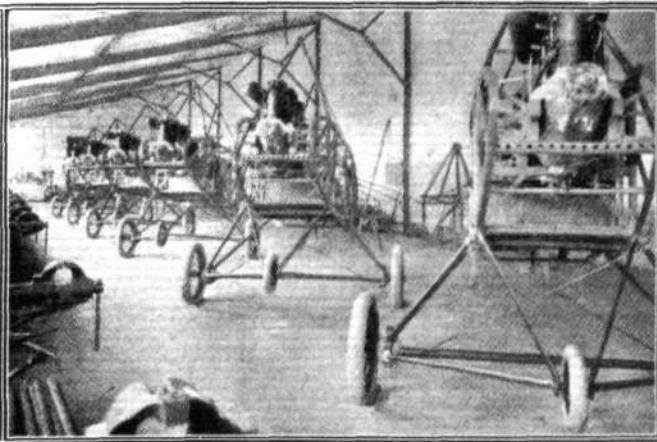
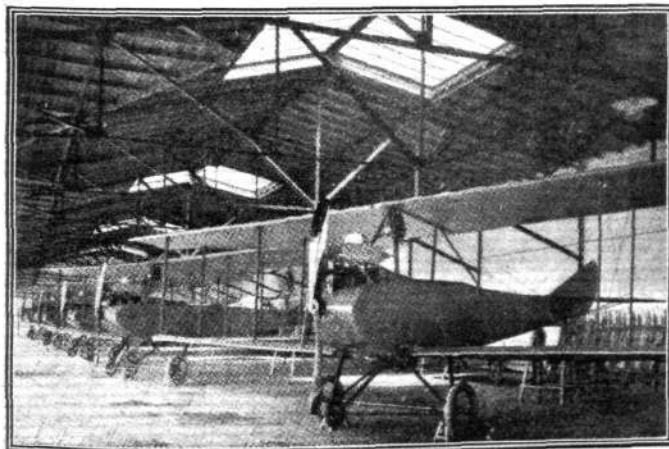


Diagram of oiling arrangements to the overhead valve gear on the Mercedes engines

the machine is in flight. The system is entirely separate from the main, automatic lubrication system.

Exhaust gases are led to a large silencer on the off side of the engine, while the carburettors and inlet manifolds are on the near side. Connection between the water jackets of adjacent cylinders is by a rubber ring held in place and pressed firmly against each cylinder by a single clip.



One of the reasons why Germany has available a number of high-powered machines. This photograph of the Euler Works at Frankfort was taken before the war, at a time when German constructors were building Government machines by dozens, and not receiving orders of ones and twos as our own constructors were doing at the time.

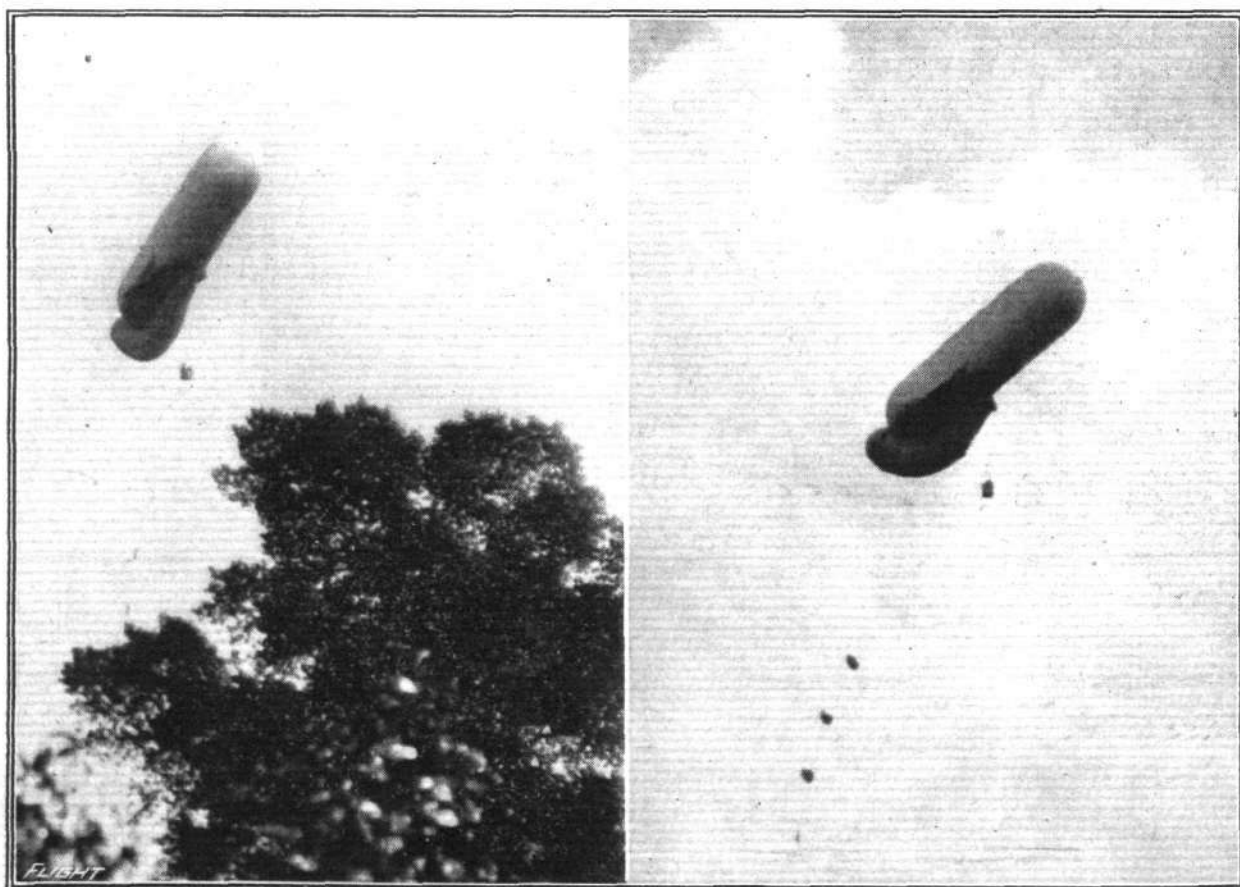


Two of the "old-timers," whose names will be familiar to most readers of "FLIGHT" from the days of air racing, when both were associated with the Grahame-White Aviation Co., were among the many visitors to Hendon on Saturday last. Both have, since the outbreak of war, been getting in good work in the services of their country. R. H. Carr, Second Lieutenant, R.F.C., who took part in so many of the great aviation events of 1914, is, perhaps, best known for his skilful handling of the little Grahame-White biplane, which was affectionately given the nickname of "Lizzie," and on which he used to execute some magnificent loops in the days before more serious work was demanded of him. Carr has been out at the front for the better part of the war, and has made good right through, so that he has earned, through sheer merit, promotion to Second Lieutenant. His call in at Hendon was a pleasant surprise for most of the folk around, who did not know but that he was still hard at "over there" bowling Boches. I understand that by way of a "rest" he has now got on to instruction work at one of our military schools. Useful as he has been on active service, he should be equally as valuable in his present capacity, since he has at least one great asset not possessed by every flying school instructor—what he does not know about the Gnome engine and its peculiarities is not worth troubling about. One might

venture to suggest that a great deal of good could be evolved if he were given the job of explaining the workings of the Gnome—call it lecturing if you like, although I do not think that Carr would fancy that title—to batches of mechanics who could not help but derive lasting benefit from his years of experience with this rotary.

x x x

The second visitor who "happened" Hendon way was F. G. Dunn, Second Lieut., R.F.C., who, like Carr, was connected with the Grahame-White firm before the war. Dunn has during the time he has been out at the front flown almost every type of machine in use, and has therefore acquired a fund of valuable experience which should without doubt stand him in good stead in his present capacity of tester at Farnborough. That he has not been twiddling his thumbs *all* the time while in France is evident, for I hear that he has spent something like 800 hours in the air, some of which probably have, indeed must have, been in pretty sporty weather, so that he is getting fairly well seasoned by now. Dunn, by the way, makes the second Grahame-White pilot and the third Hendon pilot to be engaged on testing machines at Farnborough. First there was Norman Spratt, now captain in the R.F.C., who is, as related in "Eddies" some time ago, a prisoner with the Germans. Capt. Spratt was, it may be remembered, first connected with the



Two views of one of the kite balloons which are doing such good service for the Allies at the front.

Deperdussin firm, and later took over the piloting of the Breguet biplanes for a short time. The other Hendon pilot who is now a tester is Lieut. F. Goodden, R.F.C., who enjoys a most enviable reputation as a pilot.

It was very sad news indeed to hear of the death of Flight Sub-Lieut. J. H. Rose, R.N.A.S., whose loss will be deeply mourned by friends at Hendon and elsewhere. Rose, who will be remembered as being at one time chief instructor at the Hall school of flying, was one of those modest unassuming men who usually "get there" without making any fuss about it. His engineering knowledge combined with his skill as a pilot makes his loss all the more regrettable. To his relatives and friends it may perhaps be some slight consolation to think that he died as he would probably have wished to finish, when it had to be—in the thick of it. Personally, the loss of J. H. Rose affects me in very much the same way as did the death of poor Cody affect my colleague "The Dreamer"; I keep expressing my regret in one short word.

It was a dull sort of day when I walked down Collindale Avenue towards the aerodrome the other day. The rain was apparently trying to make up its mind whether to do a *vol piqué* or not. Before I reached the gates, it had decided to go straight for the 'drome and surrounding country. Prospects of flying—*Nil*. Suddenly, however, the roar of an engine made the corrugated fence rattle, and a machine shot upwards at a very steep angle. From the way she banked on the turns I concluded that it was Mr. de Havilland on one of his scouts, although, somehow, there was a difference. It is curious, as I think I have previously pointed out in "Eddies," how, by watching the flying of a certain pilot, one gradually learns to identify him by his piloting, much as one does a pedestrian by his walk. But, to return to the de Havilland scout, when the machine landed again after a few rounds in the rain, mist and gathering dusk, I found that the pilot in charge was Mr. M. D. Manton, and moreover that this was actually the first time he had flown the machine. Considering that fact and that most of Manton's daily work in the air is done on box kites, with an occasional spin on the Grahame-White tractor scout, his manipulation of this mount was extremely good. This also seemed to be the opinion of everybody else up there who watched the flight and knew who was at the wheel.

Of French pilots who have distinguished themselves in the war mention may be made of a few, who were known to all readers of "FLIGHT" as civilian aviators before the war. Maurice Tetard, who was one of the batch of "Bristol" graduates who helped to make history when aviation was yet in its infancy, has been awarded the *Medaille Militaire*, the comment in the *Journal Officiel* stating that he has been at the front without interruption since the outbreak of war, and has rendered services of incalculable value. He has always carried out completely the missions entrusted to him, which were frequently very difficult, and has had his machine damaged by enemy fire more than twenty times. Tetard has also been mentioned in Army Orders.

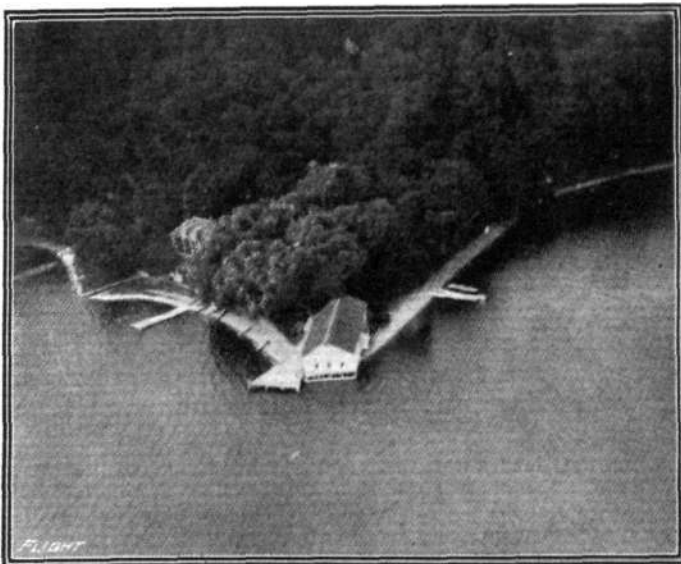
Another recipient of the *Medaille Militaire* is Adjudant pilote aviateur Jules Vedrines, whose name, as far as British Aviation is concerned, is best known in connection with the Circuit of Britain, when he was a close runner-up of Lieut. Conneau. He has carried out voluntarily seven missions of the most daring character.

Geo. Chemet, *adjudant pilote à l'escadrille M.S. 48*, was one of the best-known pilots of the Borel monoplanes, flying in the old days land machines as well as seaplanes of this make. He has been doing great work ever since the beginning of the war, and has spent about 100 hours in the blue above enemy territory. On July 30th he had an aerial fight with four enemy machines, two of which he forced to retire behind their own lines. He has also been mentioned in Army Orders.

In view of the scant success attained by the helicopter it is quite surprising how many inventors are still tackling the problem, refusing to believe that the future of aviation will be found to rest with a development of the aeroplane as we know it to-day. In this connection an interesting letter has come to hand recently from a reader in S. Africa, Mr. Joe Naudé, who says, among other things: "I am and have been a keen experimenter with the helicopter type in model form. But I dare say we would like to hear of man-lifting machines. Not merely 'jumps,' but miles of actual flight. I am sure that the direct-lift machine will come, and will be propelled either by combustion engine, electric motor (wireless and storage batteries), or human power. I am working on figures for the latter, of which, when patented, I will send photos. and data. It is strange but a fact that Boers and even natives reckon a direct-lift aeroplane will come. They have basic ideas too. Ignorant as some of these 'back-velders' are, they, too, believe that once reliable power and strong 'revolving wings,' as they call the gyrating planes, are established, men can go over mountains instead of a long way around."

I do not envy the R.F.C. men on duty at the Horse Guards' Parade, where, from morning till dusk, they have to answer questions, most of them of the hopeless order, about the captured German aeroplanes. Sometimes, however, they manage to get "a bit of their own back." One of the A.M.'s, who is a little of a philosopher, has come to the conclusion that the wisest course to follow is to agree to everything said by the onlookers. For instance, one dear old lady, who had for a long while been admiring the big silencer on the Albatros biplane, said to our worthy friend, the A.M.: "That is a funny gun, is it not?" "Yes, Madam," he replied, "it is a funny gun."

"ÆOLUS."



A point on Lake Cayuga, as seen from a Thomas hydro-aeroplane.

THE S.A. AVIATION CORPS AND THEIR DOINGS IN S.W. AFRICA.

By J. HODGSON HARTLEY, J.P., Honorary Secretary, Aero. Society of S.A.

THE following interesting account of the work of the South African Aviation Corps was written by Mr. J. Hodgson Hartley, J.P., the Honorary Secretary of the Aeronautical Society of South Africa, just after the date when the Corps left South Africa for Europe. It gives an excellent résumé of the part played by the air unit in the campaign in German South-West Africa. In this connection it may be mentioned that Mr. Hartley was attached to the Namaqualand Commando for special service as an ambulance officer, and has been recommended for the Victoria Cross for a brilliant piece of working in rescuing some wounded men at Schuit Drift; for 8½ hours he worked under fire, and he was without sleep for 40 hours.

THE S.A. Aviation Corps has left Cape Town for Europe. The C.O., Major Wallace, and staff left some weeks previously, and the eight aeroplanes that did such good work in German South-West were also sent direct.

On behalf of the Aeronautical Society of South Africa, His Worship the Mayor of Cape Town, H. Hands, Esq., J.P., vice-president of the Society, and Sir Frederick Smith, also a vice-president, together with the hon. sec., visited the corps prior to their departure.

In addressing the men at the ship's side, the Mayor said that he bid them God-speed in a dual capacity, that of the Mayor of the City of Cape Town, and that of a vice-president of the Aeronautical Society. His Worship referred to the services rendered to the Government by the Society in the early formation of what was then a school of aviation, but which now in the course of two years had developed into a corps the members of which were as fine a body of men in physique as ever left the shores of S.A.

He said they were going to a grimmer battle than that in G.S.W., but he urged them to soar higher in their ideals for humanity than the devilish ideals of their enemies.

Sir Frederick also wished them God-speed, and trusted to welcome them back to the shores of S.A. in the near future.

The Secretary then asked the Mayor to present to Capt. Batten, as representing the corps, a mascot in the shape of a gold aeroplane. Capt. Batten suitably replied. Three cheers were given by the corps to the party, after which they embarked for regions beyond.

When it was announced some nearly two years ago that our enterprising Government was turning its attention to the formation of a South African Aviation Corps, it was felt by enthusiasts in aviation matters that a step in the march of progress had been made by the Defence Department of this country. Recent events have fully justified the step taken, and though for many reasons it was found impracticable to establish and successfully carry on the nutrition of the new baby in this country, the fact that the Government did not suspend operations, but made arrangements for a number of volunteers to get their experience and knowledge in the Motherland, clearly proves that they were fully alive to the necessity of doing all in their power to create, equip, and maintain what late events in Europe have proved to be a most valuable and necessary unit in modern warfare.

The Government are to be congratulated on the success attending the establishment of this corps, and notwithstanding the lack of knowledge regarding air pockets and air currents, the operations carried on in German South-West have resulted in valuable knowledge of these conditions being obtained, and valuable knowledge of the enemy's whereabouts during practical warfare—knowledge that undoubtedly, in the case of the latter, assisted in the termination of hostilities.

Many and varied rumours were afloat as to the whereabouts of this corps, and as far back as November, 1914, rumours were in circulation in this country to the effect that "fifteen aeroplanes with a large body of naval gunners from Gibraltar" had landed at Walfish Bay. As a matter of fact, no aeroplanes were landed in German South-West Africa until May 1st, 1915. The total number landed at Walfish Bay was eight, consisting of two B.E.2c, fitted with 70 h.p. Renault engines, and six Henri Farman "war buses," equipped with 140 h.p. Canton-Unné engines. These types all worked satisfactorily, but there is no doubt that the Farman 140 h.p. is the most suitable, especially in the higher altitudes. The climb is very good on the latter machine, as is evidenced by the No. 6 H.F. rising to a height of 12,500 ft. on June 6th.

The personnel of the South African Aviation Corps was composed of officers and men under the command of Major Wallace, the officers being: Capt. Turner, Capt. Batten (Adjutant), Capt. Van der Spuy, Capt. Creed, Capt. Powell, M.D. (Medical Officer), Lieuts. Emmett, Earle, Carey-Thomas, Hewett, John, Weston, Clisdel, Driver, Sub-Lieuts. Cripps, Henshilwood, and Wood, the latter three being temporarily detached from the Royal Naval Air Service.

The administration of the S.A. Aviation Corps, like the Aerial Service of Great Britain, is considered a branch worthy of a separate entity, and when one considers the technical and scientific details involved, it tends to the better working of the corps that its officers and men should be left with a free hand to define its scope and operations.

The first batch of the South African members landed in Walfish Bay on March 20th, and the Overseas Contingent landed on April 8th.

Immediately on arrival all was bustle and excitement, the necessary hangars were erected, and the following sections formed:—Stores Section, under Lieut. Emmett and Q.M.-Sergt. McAllen; Erection Department, under Capt. Creed, with Warrant Officer Sergeant-Major Jobling as chief mechanic. Flight Section was under Capt. Turner, Lieut. Van der Spuy, Lieut. Cripps, and Flight-Sergeant Buck. Engine Section, under Lieut. Hewett and Sergeant Williams. Transport Department was controlled by Lieut. John and Staff-Sergeant Duncan. The Plane and Fabric Departments were controlled generally by those at liberty to help. The bulk of the rank and file gave a hand here, there, and everywhere as required. Regimental-Sergeant Higginbotham, of Cape Town fame, was responsible for the good order of the camp, and right worthily did he fulfil this honoured position.

Great praise is due to the commanding officer, Major Wallace, and to his popular adjutant, Lieut. Batten, for the tact and wisdom with which they inaugurated and carried out the duties involved in this the first campaign allotted to the South African Aviation Corps. Then there was Willis, or, to give him his worthy title, "Sergeant Willis of the Staff," always full of humour, who always conveyed his superior's orders with an ever ready smile.

On May 1st two Henri Farman biplanes arrived at Walfish Bay, the first of the consignment. Unfortunately, they were found to be damaged, but as before stated the corps is a complete unit in itself, and soon mechanics of all kinds were at work, replacing certain parts and repairing where necessary, and within a few days the machines were ready for the test.

The first aeroplane, B.E.2c, left the hangar on Tuesday, May 4th. Lieut. Van der Spuy had the historical honour of being the first to command the first Government aeroplane ever flown in South Africa. On the following day the camp was honoured by a visit from General Smuts, who witnessed a number of trial flights along the coast belt. The first real flight, however, took place on Thursday, May 6th, when Lieut. Carey-Thomas, accompanied by Lieut. Clisdel, left Walfish, for Garub, via Swakopmund. The erection of beacons as far as the latter place was in charge of Lieut. Weston and Sergeant Williams. On May 8th the two B.E.2c aeroplanes also left for Garub, one in charge of Captain Turner and the other under the command of Lieut. Cripps.

On May 11th an accident befel one of the B.E.2c at Garub, but, fortunately, no casualties resulted. About this period hot dust-storms prevailed, but nevertheless, in spite of the adverse conditions, advantage was taken to consider the general conditions as affecting aviation.

On May 13th the first Henri Farman biplane was flown by Lieut. Van der Spuy, and after a few minor adjustments were made, it was flown four days later, and proved a great success.

On Friday, May 21st, an armistice was arranged, and all operations of a military character were suspended. On the following day, however, the armistice was ended, and military operations recommenced.

Two days later Lieut. Van der Spuy left the base at 7.45 a.m., and arrived at Garub at 9 a.m. on one of the H.F. biplanes. He left for Karibib the following day. The machine proved to be most satisfactory.

The eight machines arrived at Walfish on different dates, and all were erected and flown successfully.

Most of the time was taken up by experimental flights in the different areas and high plateaux, and on June 15th all the machines and men left for Karibib, Omaruru, and the field of military operations.

On June 24th flight reconnaissance left Omaruru for Kalkfield, and located the enemy about 35 miles away, returned safely to camp and reported. On June 26th General Botha inspected the machines and congratulated the corps on the good work done. Four days later Lieut. Henshilwood made a two days' reconnaissance and located the enemy, and on July 26th Lieut. Cripps left on flight reconnaissance and returned to Otjwarongo with valued information.

Three days later peace was declared. The valued flight reconnaissance undoubtedly was fully appreciated by the general in command of the troops, but I think there is a greater value attached

to aerial scouting, in that the enemy realised that their whereabouts was always known to us and their doubling tactics fully interpreted. The moral effect must have been of great service to our troops and of great discomfiture to the enemy.

There is little more to be said. The next few weeks were devoted to dismantling the machines and repacking. The members landed at Cape Town on July 29th, proudly elated, and justifiably

so, at the part they had taken in the G.S.W. campaign.

There is, and there ever must be, associated with aerial navigation mishaps occurring in those regions where the air conditions are practically unknown, as was the case in G.S.W., and it says much for the experience, pluck and ability of those concerned that, despite the lack of any knowledge of the aerial conditions existing, the aerial work was conducted without a single casualty.

SUBMARINES AND ZEPPELINS.

"The next thing we did, we rose under a Zeppelin,
With his shiny big belly half blocking the sky.
But what in the — Heavens can you do with six-pounders?
So we fired what we had and we bade him good-bye."

In Mr. Rudyard Kipling's vivid series of sketches, which are now appearing in the *Daily Telegraph* under the title "The Fringes of the Fleet," there are one or two little glimpses of Zeppelins and their ways. In his third article—prefaced by a poem of which the above is the last stanza—Mr. Kipling, describing the return of some submarine commanders, relates the following:—

This was their first chance to compare notes at close hand. Together they lamented the loss of a Zeppelin—"a perfect mug of a Zepp," who had come down very low and offered one of them a sitting shot. "But what can you do with our guns? I gave him what I had, and then he started bombing."

"I know he did," another said. "I heard him. That's what brought me down to you. I thought he had you that last time."

"No, I was forty foot under when he hove out the big 'un. What happened to you?"

"My steering-gear jammed just after I went down, and I had to go round in circles till I got it straightened out. But wasn't he a mug!"

"Was he the brute with the patch on his port side?" a sister-boat demanded.

"No! This fellow had just been hatched. He was almost sitting on the water, heaving bombs over."

"And my blasted steering-gear went and chose then to go wrong," the other commander mourned. "I thought his last little egg was going to get me!"

In the fourth article Mr. Kipling returns to the subject of mines and Zepps. in his own inimitable way, thus:—

"Then bumping mines isn't exciting?"

"Not one little bit. You can't bump back at 'em. Even with a Zepp—"

"Oh, now and then," one interrupted, and they laughed as they explained.

"Yes, that was rather funny. One of our boats came up slap underneath a low Zepp. Looked for the sky, you know, and couldn't see anything except this fat, shining belly almost on top of 'em. Luckily, it wasn't the Zepp's stinging end. So our boat went to windward and kept just awash. There was a bit of sea, and the Zepp. had to work against the wind. (They don't like that.) Our boat sent a man to the gun. He was pretty well drowned, of course, but he hung on, choking and spitting, and held his breath, and got in shots where he could. This Zepp. was strafing bombs about for all she was worth, and—who was it?—Macartney, I think, potting at her between dives: and naturally all hands wanted to look at the performance, so about half the North Sea flopped down below and—oh, they had a Charlie Chaplin time of it! Well, somehow, Macartney managed to rip the Zepp. a bit, and she went to leeward with a list on her. We saw her a fortnight later with a patch on her port side. Oh, if Fritz only fought clean, this wouldn't be half a bad show. But Fritz can't fight clean."

AIRCRAFT AND THE WAR.

THE *Morning Post* correspondent at Budapest, writing under date of November 16th, gave the following details of an Austrian air raid on Venice:—

"The naval officer who was in charge of the seaplane which bombarded Venice from the air not long ago has given an account of the bombardment to a Hungarian journalist in Trieste. The pilot is described by the correspondent as a very young man, who left the naval school just before the war began.

"I left the base with an observer at nine o'clock in the evening," he said, "and arrived over Venice at 10.15. We were over the town a quarter of an hour, and arrived back before midnight. Originally we intended to throw bombs on the naval arsenal, on

the railway station, on the electric depot, and on other military objects as a reprisal for the aerial bombardment of Trieste. It was a beautiful night, a full moon allowed us at the outset to see everything quite clearly, but afterwards thick clouds obscured the view. I cannot describe the route we took, for it would reveal our starting point. The railway line outside the city on the long bridge gave us the first hint as to where we were. At this point the moon disappeared, and we flew towards the city in total darkness. We could hardly find it, for the Italians are very cautious, not one lamp is lighted in the streets, not one illuminated window can be found, making it almost impossible to direct oneself at a height of 3,000 feet.

"The first object we could distinguish was the Tower of



A batch of Curtiss fuselages, in various stages of completion, at the Curtiss works at Buffalo, N.Y.

St. Mark. The city was enveloped in fog, but nevertheless we could soon make out the different canals, especially the Grand Canal, and then the small squares came into sight. We could also clearly distinguish the ships in the harbour. When we threw the first bomb the town began to wake up to the occasion. Suddenly numerous lamps were lighted, searchlights played by the dozen, and at the same time the guns began to fire at us furiously. The searchlight on the Tre Porti particularly lit us up, and gave a chance to the gunners, who aimed well and made us very uneasy.

"Nevertheless, we escaped, and threw our bombs, one on the arsenal, two on the railway station, and three on the electric dépôt. Among these one was a fifty kilogram bomb, the rest smaller incendiary bombs. We could also perceive the effects of the bombardment, for at four different points we saw flames. We are convinced that one of the dépôts at the arsenal caught fire, and we could see the flames when we were far away from Venice on our way back."

The *Times* correspondent at Petrograd, writing from the Army Headquarters, under date November 21st, stated:—

"My hosts at one of the batteries welcomed me into their comfortable dug-out. We retired early to rest in order to be up betimes to visit the trenches. But our slumbers were destined to be broken up. The telephone from the straw pallet of the commander hummed out orders to prepare for a Zeppelin. We all promptly sallied out, and I had my first glance of a nocturnal visitor so rarely seen on the Eastern front. Sailing at a great height the Zeppelin emitted spasmodic flashes, apparently trying to pick out a course towards Dvinsk without making himself too conspicuous. One or two shrapnel shells, however, burst so close that the commander of the aircraft lost his judgment and turned sharply westward, at the same time dropping a shower of bombs, a great part of which were afterwards ascertained to have fallen on the enemy's own trenches, causing heavy loss of life."

An Exchange message from Amsterdam on November 24th stated:—

"Travellers who have arrived at Roosendaal from Brussels state that two Allied aeroplanes were seen over Brussels on Monday afternoon. They threw the latest editions of the London and Paris newspapers over the city, and were out of sight before the German gunners could fire a shot."

Writing from Paris on November 25th the *Daily Mail* correspondent in Paris stated:—

"There are, however, signs that the Austrians consider that the game is lost. They have transferred their aviation camp from Aisovizza to Aidussina, 12 miles south-east of Gorizia, evidently preparatory to a retreat."

A Central News message from Amsterdam on November 25th said:—

"A Zeppelin airship manœuvred near Pristina and dropped bombs."

"A French aeroplane appeared above Prilep and dropped bombs with good effect on barracks, in which were Bulgarian infantry."

The *Morning Post* Petrograd correspondent writing on November 26th said:—

"The effects of cold seem to tell especially on the aviation service, and the German aeroplanes go up less and less often. Owing to the rapid increase in the intensity of the cold with every hundred yards of altitude, aeroplanes are compelled to fly comparatively low, which, having regard to the Russian artillery, is too often fatal. About a fortnight ago, already, a German 'Albatros' was caught, absolutely intact, thanks to the cold of the high altitudes. It was observed over the Russian lines, and was allowed to get well to the rear before a Russian flotilla of aeroplanes mounted and cut off its retreat, and concurrently the artillery became busy. The 'Albatros' soared to an altitude where the cold must have reached minus 31, or 63 deg. of frost, Fahrenheit. Soon it was seen to be circling aimlessly, and finally it made a good descent, quite normally, into the marshes, which are unoccupied, away to the left, and behind the Russian lines. After a couple of hours' search the 'Albatros' was discovered. The pilot and observer were both dead in their seats, and the machine was in perfect condition. Aviators are of opinion that death was caused by intense cold aggravated by rapid motion through the air. It is probable that the last conscious act of the pilot was to plane down, that his and his companion's arms being frozen, they were unable to loosen the straps which bound them to their seats, and that heart failure from cold brought death."

The special correspondent of the *Petit Parisien* at Salonica telegraphed under date November 26th:—

"Squadrons of French aeroplanes yesterday bombarded with complete success the Bulgarian town of Strumnitza, where large accumulations of stores and a considerable concentration of troops had been reported. The aeroplanes were bombarded without result."

A message from its Ghent correspondent in the *Telegraaf* of November 27th stated:—

"Seven Allied airmen last Thursday appeared above the district of Oudenaerde and dropped bombs on the railway bridge across the Scheldt near Eename. The bridge belongs to the important railway line connection Courtrai and Brussels. Five bombs hit the bridge, which was destroyed. Civilians have been pressed into the work of reconstructing it."

From the frontier the *Telegraaf* on Tuesday learnt:—

"Four Allied airmen last Saturday dropped bombs on Gits and Beveren, near Roulers. At Beveren some soldiers were wounded and some sixty horses killed or hurt. No damage was done at Gits."

A correspondent writing in the *Berliner Tageblatt* regarding the fighting on the Isonzo front stated:—

"Airmen have been playing a great rôle, and the Italians have a new type to display in their great battleplane. On the Isonzo front, and in the Wippach Valley, whenever the weather clears, one can see their mighty aeroplanes, thirty metres in length. They are armoured, and have three motors and two or three machine-guns. Entire air squadrons are frequently seen fighting with each other."



"Life is a mirror—smile at it and it will smile back; frown at it and it will frown again."

RECRUITING OFFICER: "You realise the dangers before you? You are not afraid of having horses shot under you?"

SOCIETY RECRUIT: "Me? I had two motor boats explode under me, three autos start over me, and an aeroplane fall with me during the past social season alone!"—*Puck*.

THE war-aviator is not too proud to fight, though he is generally above fighting.—*Boston Transcript*.

When Burglars Travel by Aeroplane.

HUB: "One night, while you were away, I heard a burglar. You should have seen me going downstairs three steps at a time!"

WIFE (who knows him): "Where was he? On the roof?"

Zeppelinism.

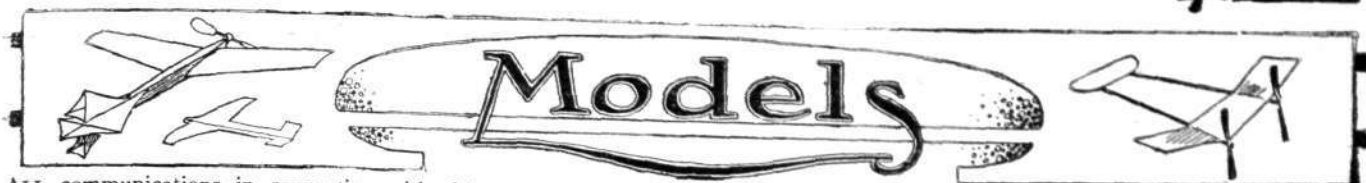
"SHOOTING the moon," said a witness at the Clerkenwell County Court recently, was now called "a Zeppelin move."

WILLIS: "What do you think the result of getting Edison, Wright, and Ford on the Naval Board will be?"

GILLIS: "The invention of a naval aeroplane run by electricity that will sell 460 f.o.b. Detroit."—*N. Y. World*.

"We advanced crabwise, jumping from cloud to cloud. We waltzed home delirious with joy, photographing each other on the way."

Only the simple story of a French aviator. Ten years ago it would have been accepted as positive proof of *delirium tremens*.—*N. Y. Evening Mail*.



ALL communications in connection with this section should be addressed to the Model Editor, "FLIGHT," 44, St. Martin's Lane, London, W.C. Correspondents are requested to write on one side of the paper only.

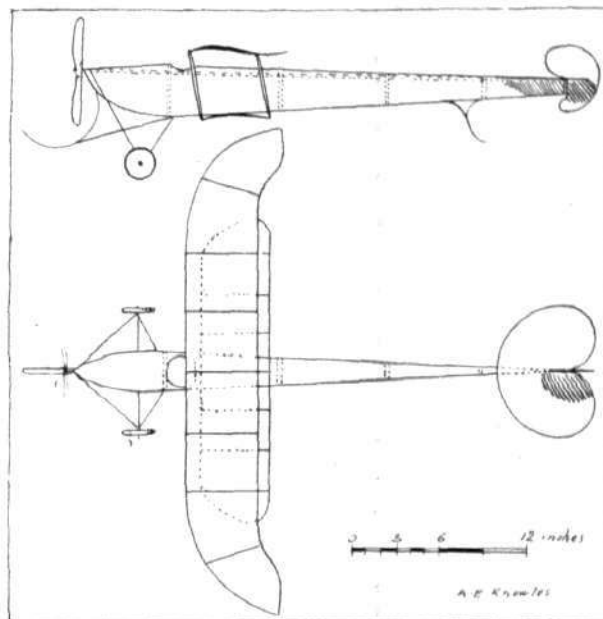
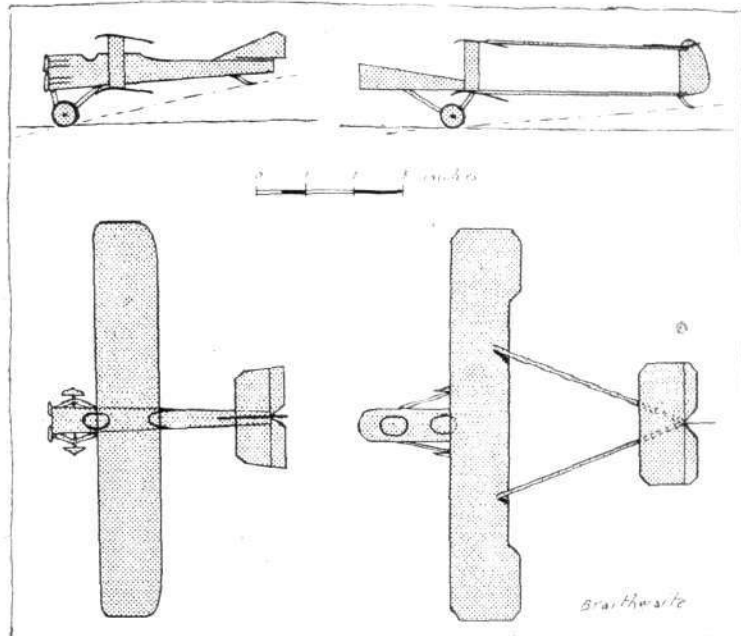
Paper Models in Australia.

THE notes on the making of paper models which have appeared in these columns from time to time have led to some work being done in this direction in Australia, as the following letter from Mr. M. A. Braithwaite, of Melbourne, will show:—

"I read your article in 'FLIGHT,' No. 35, Vol. 7 (just to hand), on paper models with much interest, as I have, together with

wheels, supported on a 9-in. axle, made from a cycle spoke. The two V's are made from 16-gauge steel wire. The rear skid is made from bamboo $\frac{1}{4}$ in. by $\frac{1}{8}$ section.

"The main planes, tail, and rudder are made of steel wire and covered with Jap silk. The top main plane has 7 ribs, and is strengthened by a piece of U section steel ribbing, running along the front edge for the greater part of its length.



the assistance of a friend, Mr. W. B. Kirkland, been building a number of machines of the type advocated, and although they are not actually scale models of any particular machine, they are proportioned as near as possible without being actually to scale. I am enclosing the drawings of two of our manufactures.

"As will be seen one of the machines is of Farman design, and although this model is slightly too heavy to be much of a flyer it does some good glides at odd times. The tail booms are made of paper rolled into a cylinder. The chassis of this and all the machines are constructed in the same manner, and are remarkably strong.

"In building the models we use no other material than paper, except that a portion of a match is used for the axles, while the wheels run on stub axles of pins pushed into the match. The wheels themselves are made from visiting cards and are disc. The models are all weighted in front with brass paper fasteners, the planes are cambered and usually of eight inches span. As regards actual flying they are decidedly graceful in appearance and very real in their actions, especially when they land and taxi along the ground. The gliding angle is 1 in 5-6. This is rather steep, but as one can rarely get a long flight indoors it does not much matter. In flight they carry out all manner of evolutions and stunts, and by throwing them straight up to a height of ten feet they perform a loop of two feet six inches or three feet in diameter, and upon recovering from the dive fly off as if they were actually under control."

A New Zealand Model.

From Devonport, Auckland, N.Z., Mr. A. E. Knowles sends us the following particulars of an interesting model which he has built:—

"I am sending, herewith, drawings of a tractor biplane designed and constructed by myself.

"The fuselage, which is 3 ft. long, is oval in section. The ribs are steamed to the required shape and are laid on three birch longerons, $\frac{3}{8}$ in. by $\frac{1}{8}$ in. The front is finished off with a light brass bearing, and the rear is brought to a vertical knife-edge. At the end of this the rudder is hinged. The whole fuselage is covered with silk, except where a hole for a pilot's seat is fitted, and enables attention to be given to the front rubber hook, when necessary.

"The chassis consists of a central skid of $\frac{1}{2}$ in. by $\frac{1}{8}$ in. bamboo, a compression strut of the same material and a pair of 2-in. disc

"The propeller is 10 ins. diam. and 15 ins. pitch, and is driven by eight strands of $\frac{1}{4}$ in. strip rubber. The best flight to date is 72 yards and 31 secs., both being obtained in the same flight, but I hope to get something better from it yet. The above flight was r.o.g."

Mr. A. E. Knowles concludes his letter with the practical suggestion that he would like to correspond with an enthusiast on this side of the world, so that they might mutually assist each other in their ideas. If any of our readers would care to take up the suggestion we shall be pleased to give them Mr. Knowles' full address.

AFFILIATED MODEL CLUBS DIARY. AND REPORTS.

Paddington and Districts (77, SWINDERBY ROAD, WEMBLEY).

A SPECIAL general meeting will be held at 77, Swindery Road, Wembley, on Saturday, December 4th, at 6 p.m. Several interesting items are down for discussion, namely: The future work of the club; recording performances of models in actual flight; development of the compressed air model; proposed wind tunnel. The committee would be pleased to see any past or present members now serving their King and country if they happen to be on leave at this date.

Monthly Report.—The few remaining members who are not on active service have done little flying of note lately, but mention should be made of the activities of Messrs. J. R. Barrett, T. Carter, W. E. Evans, H. R. Weston, and H. S. Woolley. Work on compressed air models is proceeding as well as present circumstances permit. It is gratifying to know that the club anticipates no difficulty in holding together until the war is over.

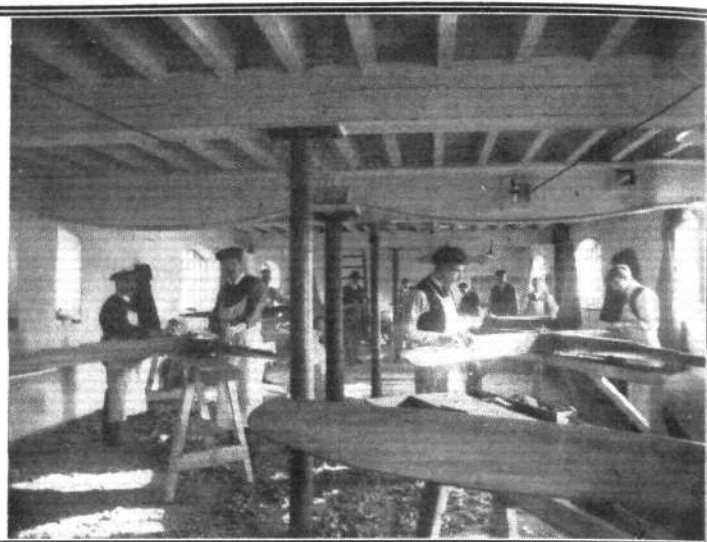
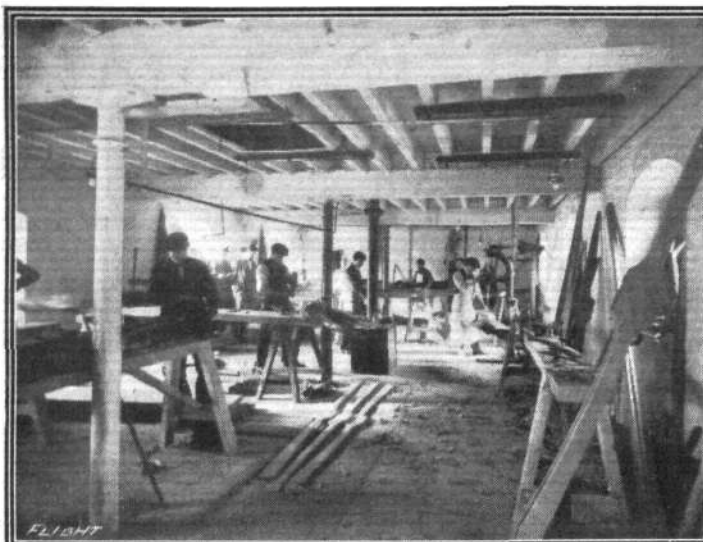
UNAFFILIATED CLUBS.

Liverpool Aero Research Club (62, CEDAR GROVE, LIVERPOOL).

Monthly Report.—The month of November has been the quietest of the year, occasioned by the severe weather and business pressure of members. During the beginning of month B. Tear put in some good h.l. duration flying. Nov. 20th saw the appearance of the new divided tail "military"-type mono., which has been very well improved in appearance, the previous model being nicknamed the "angry wasp," owing to its rather ungainly appearance, despite a fair efficiency. Members were glad to learn that A. G. Pugh, wounded in France, was discharged from the General Hospital, Burton-on-Trent, on the 13th. Another member, J. Kilshaw, has now joined the 5th King's Liverpool Regiment.

Scottish Ae.S. Model Ae.C. (5, DOUNE QUADRANT, GLASGOW).

No flying meetings will be held during the coming month.
Monthly Report.—During the past month no flying has taken place. Two more members of the club are now on service, namely, Mr. Ian S. Ross, Army Service Corps, and Mr. A. P. Mackim, Royal Flying Corps. Will members or any persons at any time connected with the club having photographs, drawings and data of models please forward same to the hon. sec., for insertion in the Club History?



A couple of views showing corners of the two propeller shops of Messrs. T. W. K. Clarke and Co., Ltd., of Hampton Wick. On the left the two-blade propeller shop, and on the right the four-blade shop.

PROFESSOR G. H. BRYAN AND THE AERONAUTICAL "INSTITUTE."

WE have received the following official communication regarding Professor Bryan's connection with the above "Institute":—

Professor G. H. Bryan, F.R.S., has resigned from the "Executive Committee" of the recently founded "Aeronautical Institute of Great Britain" (which body should be carefully distinguished from the Aeronautical Society of Great Britain, founded in 1866). In regard to his decision, Professor Bryan states:—"When the secretary (of the Institute) invited me to serve on the committee, and enclosed a prepaid telegraph form for reply, I certainly did not realise the character of the committee, and I do not think he could have realised the nature of my qualifications and disqualifications. Had the proposed committee been a large and thoroughly representative body my name might not have been out of place on the list, but I cannot think that an executive committee containing two mathematicians out of a total of five is likely to appeal to those responsible for the manufacture and production of aircraft."

Professor Bryan occupies a somewhat unique position in the aeronautical world. Eighteen years ago he formed the opinion that purely mathematical investigations would play an important part in the development of aviation, and from that time onwards he has made these particular problems his special study. (It will be recalled that in May of this year he received the Gold Medal of the Aeronautical Society and read the Wilbur Wright Memorial Lecture before that body.) He has refused to divert his attention to the more fascinating attractions of practical aeronautics. As he himself says:—"There are plenty of people able and willing to build aeroplanes and to fly on them, but you may turn over pages and pages of mathematical journals without finding a single reference to aviation among them." He is now busily occupied on a number of problems connected with the motions of aeroplanes, and naturally does not wish to express opinions on practical questions on which he makes no claim to be an authority. Lastly he points out that he is not a member of the Government Advisory Committee for Aeronautics, as has been erroneously stated in announcements of the "Aeronautical Institute."



Another "Wireless" Story.

IN the "wireless" news sent out from Berlin on November 29th, the following appeared: "A report from the *Frankfurter Zeitung* states that King Peter and his Government may try to escape in aeroplanes, and eight aeroplanes have been sent to the Serbian headquarters for this purpose."

A Raid Memento.

A FIRM in the London District who had their brass sign pierced by a piece of a Zeppelin bomb on the occasion of the last raid have placed a plate round the hole, with the inscription "Zeppelin Raid, Oct. 13, 1915."

Game's Christmas Bazaar.

THERE need be no difficulty about what to give for Christmas presents, for Game's Xmas Bazaar is open as usual, and those who

are unable to visit the great Emporium in Holborn can obtain a copy of the catalogue, which gives prices, details, and illustrations of the thousand-and-one gifts for young and old. Of course the war-note is much in evidence in the toy department in the form of model armoured cars, guns, submarines, warships, &c., and there is a very great variety of model aeroplanes of all sizes and types. In this connection mention may be made of two small petrol engines suitable for use in large models. Those who wish to give a present to a "grown-up" in either of the flying services will also find a large selection of suitable articles such as wristlet watches and compasses. Drop a postcard to Messrs. A. W. Gamage, Ltd., Holborn, London, E.C., for a catalogue.

Mr. Sydney Pickles.

IN some quarters there appears to be an erroneous impression abroad that Mr. Sydney Pickles finds his time so fully occupied with the testing of Curtiss machines that he is unable to assist other firms in this direction. As will be seen from an announcement elsewhere in this issue, Mr. Pickles, who has now established himself at Hendon, is able to make arrangements to put any machines through their official acceptance tests. In this work Mr. Pickles, who has had a unique experience as regards the number of machines he has handled, will have the assistance of Mr. Clifford B. Prodger, the well-known Hendon pilot.

A Propeller-Making Firm.

HAVING had many years of experience in the working of wood of all kinds, Messrs. Lucraft and Westcott, Ltd., some time ago saw an opening in the aircraft industry, and determined to concentrate upon the difficult task of propeller making. That they have made good is a tribute to the energy and enthusiasm of the managers no less than to their knowledge of timber and the best methods of working it. At their works at 17, Rushton Street, New North Road, London, N., they have installed the necessary machinery, much of which has been designed by the directors themselves, so that they are now able to turn out propellers of all kinds to pass Government inspection and tests as regards material, workmanship and accuracy.

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